

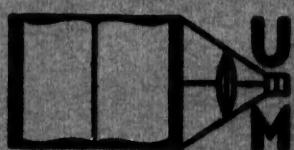
Vol. XV

No. 2

DISSERTATION ABSTRACTS

*A GUIDE TO DISSERTATIONS AND
MONOGRAPHS AVAILABLE IN MICROFORM*

UNIVERSITY MICROFILMS
ANN ARBOR, MICHIGAN: 1955



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AGRICULTURE

AGRICULTURE, GENERAL

THE BIOLOGY OF BEES OF THE GENUS MEGACHILE WITH SPECIAL REFERENCE TO THEIR IMPORTANCE IN ALFALFA SEED PRODUCTION IN SOUTHERN ONTARIO

(Publication No. 10,749)

David Harvey Pengelly, Ph.D.
Cornell University, 1955

Alfalfa seed production has declined in most of the older, established seed growing areas of North America, particularly during the past 2 or 3 decades. In much of southern Ontario in recent years it has become practically impossible to obtain commercially profitable seed yields. Studies conducted in 1951 and 1952 indicated that certain species of wild bees were the only insects that visited, tripped and pollinated the alfalfa blossoms to any extent. Of these the most efficient pollinators were the solitary bees of the genus Megachile.

Various workers have stressed the importance of protecting the existing populations of wild bees and have suggested that the number of bees might be increased. The Megachile appear to offer the greatest possibilities in this area and since any conservation programme will have to be based on a fairly complete knowledge of the biology of the bees, studies were undertaken to provide this information on the more common species in southern Ontario.

The Megachile or leaf-cutting bees construct the cells of their nests from oblong and round petal and leaf-pieces which they cut from various plants. Each cell is individually constructed and provisioned with pollen and nectar before the bee lays a single egg on the food mass and closes the cell.

The bees appear about the middle of June and produce but one generation per year in this region. The nests of 7 species, viz., M. brevis, M. texana, M. centuncularis, M. relativa, M. melanophaea, M. frigida, and M. latimanus, were found and studied. A total of 214 cells were collected and data on emergence, parasites and mortality were obtained from this.

Emphasis was placed on the nesting sites of each of the species and to details of cell and nest construction. Most of the species studied built their nests in the soil or under rocks on the surface of the ground. M. centuncularis utilized the cracks and crevices in the walls and roofs of buildings and M. frigida had a preference for decaying wood.

Most of the nests consisted of but one or two cells. Many of these failed to develop or else produced a parasitic bee of the genus Coelioxys. As a precaution no nests were taken unless the bee was definitely identified during some phase of cell construction. These nests were studied in detail and there appears

to be certain consistencies in the sequence in which the oblong and round leaf-pieces are brought to the cells by the various species of bees.

The kinds of flowering plants which served as sources of pollen and nectar for the bees received considerable attention, particularly those that competed with the alfalfa for bee visitation. The flower-visiting rates and tripping efficiencies of the various species of bees on alfalfa were also determined.

The nests of 6 species were kept under continuous observation for a total of 236 hours to determine the efficiency of the bees in cell construction and in provisioning. This phase of the work was concerned primarily with the length of time required by the bee to build a cell; the number of loads of pollen that were needed to provision it and how long it took. The information obtained from this study and a knowledge of the flower-visiting rates of the females on alfalfa can be used to calculate the value of a bee in terms of pounds of seed produced.

Data on the emergence of individuals from the cells collected in 1952 and 1953 indicate that the Megachile are capable of increasing their numbers under favorable conditions and suggestions are made by which this may be brought about. Limited information is presented on the immature stages of the Megachile and also on the parasitic bees of the genus Coelioxys.

297 pages. \$3.71. MICA 55-249

AN APPRAISAL OF THE AGRICULTURAL PROGRAM IN THE FIRST FIVE YEAR PLAN OF PATIALA AND EAST PUNJAB STATES UNION, INDIA

(Publication No. 10,755)

Bhagat Singh, Ph.D.
Cornell University, 1955

This study deals with the formulation and the working of the State Five Year Plan as it applies to Agriculture in Patiala and East Punjab States Union (PEPSU).

PEPSU is a newly formed State situated in the northwestern part of the Indian Union. The State has a land area of about 10,000 square miles and a population of 3.5 million. Agriculture alone employs more than two-thirds of the total population in the State. Agricultural productivity both per acre and per person is low due to a combination of (a) surplus agrarian population, (b) low crop yields, (c) inadequate irrigation facilities, (d) inadequacy of farm finance, (e) unsatisfactory land tenure arrangements and (f) unorganized marketing of agricultural produce.

The PEPSU Plan to increase agricultural production was a part of the country-wide effort to meet the problem of food shortage in India. The Plan was prepared under the direction and control of the National Planning Commission. Agriculture was allotted more than one-half of the total expenditure of Rs. 814 lakhs. The important agricultural schemes are the reclamation of waste lands, consolidation of holdings, introduction of better seed, implements and fertilizers, irrigation works and the formation of cooperative societies. Another noteworthy feature of the Plan is the initiation of community development and extension service program.

The implementation of the development schemes which began in April 1951 worked according to the schedules and targets set in certain cases, while the progress was slower in some others. The Dhuri Community Development Project came into operation in October 1952, while the Bhadson Pilot Extension Project was already working since April of the same year. The start in case of reclamation of waste lands was long delayed as the work was not begun until January 1954.

Since the Plan is still to complete one-third of its course, an assessment can only be made on the basis of its achievements in the first three years. By the middle of 1954 it was fairly evident that agricultural production in the State has risen considerably. How much of this increase was due to the prevailing favorable weather was difficult to say. Land consolidation work was making rapid progress and the results achieved in the field of irrigation were satisfactory. The success of a development scheme was more or less assured whenever Government provided finance to the cultivators. As a result of legislation the interests of tenants-at-will were protected and occupancy tenants acquired proprietary rights over their lands.

Even if the various schemes achieve their goals by 1956, the Plan is not expected to bring radical changes in the structure of agricultural economy. In view of the limited resources, the Plan is rather modest in its scope. The total public expenditure on agricultural projects in PEPSU, if distributed on the agricultural population comes to less than Rs. 25 per head in the entire five-year period.

Greater capital investments are, undoubtedly, necessary to speed up the development work in agriculture. But equally pressing is the need for better and more judicious use of available resources of men, money, and materials. For instance one-fourth of the expenditure on agriculture is earmarked for cultivation of waste lands. But the merit of using this money on new lands rather than on intensive cultivation of the existing lands can be seriously challenged in the interests of maximization of economic utilities. It is more so when more than 75 per cent of the total land in PEPSU is already under cultivation.

The chronic underemployment of the peasant caused by the surplus agrarian population will only go by creating more rural non-farm activity in PEPSU. However rural industrialization remained more or less neglected. The total budgetary allocations under the

Plan made for village industries were less than one per cent of the total expenditure.

249 pages. \$3.11. MicA 55-250

AGRICULTURE, FORESTRY AND WILDLIFE

FOREST SUCCESSION ON THE POORLY-DRAINED SOILS IN THE HIGGINS LAKE AREA OF MICHIGAN

(Publication No. 9949)

Tao Timothy Ku, Ph.D.
Michigan State College, 1954

The objective of this study is to distinguish and identify the various types of vegetation found on the poorly-drained soils in the Higgins Lake area and to determine their probable trend of succession upon the ecological basis.

The Higgins Lake area is located in the northern central part of the lower peninsula of Michigan. Ecologically, it is within the Hemlock-White Pine-Northern Hardwoods Formation as defined by Nichols (1935), Braun (1950), among others.

Five types of vegetation were recorded on the poorly-drained soils in the area. They were: (1) The Marsh or Open-meadow type, (2) The Swamp Shrubs of Salix-Cornus-Alnus Association, (3) The Lowland Aspen of Populus-Salix Association, (4) The Swamp Coniferous forest, and (5) The Swamp Hardwood forest. Quadrats of three sizes were used for vegetation study, i.e., 1/5 acre quadrat for tree vegetation; 1/10 acre quadrat for shrub vegetation; and 1/1000 or milacre quadrat for vegetation below six feet tall, the herbaceous layer.

Ecological factors were considered in three groups: (1) Climatic, (2) Edaphic, and (3) Biotic. Among the climatic factors discussed, evaporation is believed to show the combined effect of the other three, temperature, relative humidity, and precipitation. Data of evaporation rates in three different vegetation types were obtained by using Livingston atmometers. Results show that the evaporation rate decreases from the Marsh to the Swamp Shrubs type and to the Swamp Forest. This indicates that although the forest cover may be the cause of the lower evaporation, the higher evaporation rate in the Marsh may still be an important factor in retarding the establishment of forest cover on that area.

Soils of all the quadrats were investigated. Samples of seven soils were collected by horizon to determine their characteristics. Statistical analyses were applied to analyze all the laboratory data. Results show that there were no differences between the volume weight and the total porosity of the soils. Only the Newton sand had a lower capillary porosity than the others. Results of field determinations of soil

moisture leads to the belief that soil moisture content decreases from the Marsh to the Swamp Shrubs and to the Swamp Coniferous Forest. The peaty soils had higher organic contents than the mineral soils. Soils of the Marsh type were strongly acid in reaction, followed by the two Rifle peat soils of the Swamp Shrubs and the Swamp Conifers. The Bergland soils of the Swamp Hardwood type were almost neutral in reaction.

Biotic factors are not believed to be of great significance to influence the forest succession on the poorly-drained soils in the region. Fire which is usually caused by man is probably the most important factor that will induce secondary succession.

Diagrams of forest succession on the poorly-drained soils in this area is shown in Fig. 12. The principal trend of succession is believed to be that from Marsh to the Swamp Shrubs to Swamp Conifers to Swamp Hardwoods and finally after a relatively long period of time to the upland, mesophytic, climax type of the Hemlock-White Pine-Northern Hardwoods. The Lowland Aspen type is most commonly thought to be the fire or temporary type after the original forest has been burned over or otherwise denuded. The Swamp Hardwoods, the Swamp Conifers of Thuja-Abies-Picea, and the Marsh type are all believed to be the physiographic subclimax type to the area.

211 pages. \$2.64. MicA 55-251

accumulation of iron and nitrogen from solutions, while iron and nitrogen showed the reciprocal effect on zinc. Nitrogen apparently depressed uptake and accumulation of zinc from the soil.

High light intensity was shown to be associated with greater accumulation of zinc by tomato seedlings in nutrient solutions than low light intensity. The intensity of light influenced distribution within tomato seedlings, and the effect depended upon the length of the period of exposure to light.

The effectiveness of some treatments with zinc in the field on apple trees was investigated. A dormant spray of zinc sulfate was more effective than soil treatments in increasing the zinc content of the leaves in the following season.

164 pages. \$2.05. MicA 55-252

STUDIES ON MONOPOLOIDY IN MAIZE

(Publication No. 10,753)

Robert Ramsay Seaney, Ph.D.
Cornell University, 1955

Any investigator using monoploid or autodiploid corn plants in theoretical or practical plant work encounters three imposing problems: procuring monoploids, growing monoploids, and doubling the number of chromosomes of monoploids. Studies of these three problems have been made with the hope that they will cause an increase in the understanding and future application of the monoploid method of plant breeding.

The identification of monoploid plants was facilitated by pollinating all seed stocks with Randolph's marker stock a₁B Pl C R Pr lg. This is a brown, liguleless inbred line which results in purple hybrid progeny when crossed to stocks carrying the dominant allelemorph, A, for anthocyanin development. In the hybrid progeny, the occasional maternal and paternal monoploids are identified by their lack of purple plant color.

Results and conclusions of the various studies are summarized as follows:

1. A total to 669 maternal monoploid plants were found in 916,789 seeds, an average frequency of .73 monoploids per 1,000 seeds.

2. Four paternal monoploid plants were found in approximately 750,000 seeds, or one paternal monoploid plant per 187,500 seeds.

3. Frequencies of monoploids in single crosses were not always intermediate between the frequencies of the parental lines.

4. There were no significant differences between frequencies of the reciprocal crosses of six different single crosses.

5. The pollen parent inbred B8 produced significantly higher frequencies of monoploid plants than the pollen parent, Oh51A.

6. Significantly greater frequencies of monoploids were found in successive self-pollinated generations of the commercial hybrid, Funk G-6.

AGRICULTURE, PLANT CULTURE

A STUDY OF THE EFFECTS OF SEASON, VARIETY, LIGHT, AND CERTAIN INORGANIC ELEMENTS ON THE ZINC NUTRITION OF THE APPLE

(Publication No. 10,748)

Edmund Newton O'Rourke, Jr., Ph.D.
Cornell University, 1955

The influence of variety, season, light intensity, and the interrelations with certain other elements on uptake and utilization of zinc were investigated in the field, and with sand and water culture solution methods in the greenhouse, in 1953 and 1954. Of the five varieties studied, McIntosh, Cortland, Red Delicious, Northern Spy, and Rhode Island Greening, only Red Delicious showed a consistent varietal effect for the two seasons.

In general, the absolute amount of zinc in the leaves increased in early summer then decreased until the last sampling date in late August. Concentration on a dry weight basis decreased consistently as leaf weight increased.

The expression of zinc concentration in the leaf on an area basis was shown to be more consistent with absolute zinc content than was concentration on a dry weight basis.

Zinc appeared to depress the uptake and

7. There was no increase in monoploid frequencies when using pollen which had been stored 24 hours or pollen from tetraploid plants of the marker stock a, B, Pl, C, R, Pr, lg.

8. Delayed pollination was successfully used to increase the frequencies of monoploid plants in eight different seed stocks.

9. Significantly greater frequencies of monoploids were found in seeds from the base of the ear than in seeds from the top of the ear, when pollination of the ears was considerably delayed.

10. When pollination of Cornell M-1 was delayed 14-15 days, seeds of larger sizes were found to have greater frequencies of monoploids than smaller seeds.

11. The percentage of self-fertile monoploid plants was increased 32 to 49 per cent by treating monoploids with .05 per cent aqueous colchicine solutions.

112 pages. \$1.40. MicA 55-253

FOLIAR AND SOIL APPLICATIONS OF NITROGEN TO SOUR CHERRY AND MAGNESIUM TO APPLE TREES

(Publication No. 10,756)

David Rudger Walker, Ph.D.
Cornell University, 1955

Nitrogen fertilization of sour cherry trees with foliar sprays of urea was compared with soil applications of ammonium nitrate. Large differences between treatments were not obtained. The most significant result in 1953 was that of defoliation and spray injury. In 1954 experiments showed that the biuret impurity present in the urea was the cause of the spray injury. Treatments receiving the same amount of urea, containing higher percentages of biuret, caused considerably more defoliation and spray injury than did the crystal urea treatment.

Control of magnesium deficiency on apple trees was also studied. Foliar sprays and soil treatments were applied during 1953 and 1954 in the field. Magnesium sequestrene sprays were of little value in

increasing the magnesium content in the leaf or controlling the visual deficiency symptoms. Epsom salt spray treatments in combination with urea were the most satisfactory in maintaining a high level of magnesium in the leaf and showing the least deficiency symptoms. Sprays in July were just as effective as those in June. Soil treatments receiving dolomitic limestone plus kieserite showed an increase in leaf magnesium, though it was small, after only one year of treatment. Treatments receiving mulch showed a large increase in leaf nitrogen and chlorophyll, but only a small increase in leaf magnesium. Rototilling was of little value in increasing the leaf content of the minerals studied. However, it did increase the amount of available magnesium in the soil after lime was applied. The spray treatments were more effective than the soil treatments in increasing leaf magnesium.

Greenhouse studies of factors that affect the absorption of magnesium and nitrogen by McIntosh apple leaves showed that approximately twenty per cent of the magnesium sulfate applied was absorbed. This amount was absorbed within the first hour. Urea penetrated much more rapidly than magnesium sulfate. Seventy-five per cent of the urea was absorbed after 48 hours without injury to the foliage using a 2 per cent urea solution. Magnesium sulfate decreased the rate of urea penetration. After a period of 6 days absorption, magnesium sulfate decreased urea penetration by twenty per cent. As concentrations of magnesium were increased the retarding effect of urea penetration became greater. Carbowax, cellosolve and glycerine in combination with magnesium had no effect on the rate of magnesium penetration. Other forms of magnesium were compared with the sulfate form. Those penetrating rapidly caused spray injury when the magnesium equivalent of 5 per cent magnesium sulfate was used. Magnesium chloride and acetate, when used in lower concentrations to prevent injury, penetrated considerably faster than magnesium sulfate. Magnesium was absorbed equally well by the upper as the lower leaf surface in the time intervals studied. Rewetting of the foliage, after a magnesium sulfate application, did not increase the per cent magnesium absorbed.

207 pages. \$2.59. MicA 55-254

BACTERIOLOGY

SOME OBSERVATIONS ON THE GROWTH OF WESTERN EQUINE ENCEPHALOMYELITIS VIRUS IN CULTURES OF L STRAIN CELLS

(Publication No. 10,761)

Velma Catherine Chambers, Ph.D.
University of Washington, 1954

Western equine encephalomyelitis virus persisted in cultures of L strain cells for as long as 17 months. The minimal infective dose of infected mouse brain virus for mice and for L strain cells was approximately 10^{-7} . After cultivation of the virus in L strain cells for 14 months, the minimal infective dose of infected tissue culture fluid ranged from 10^0 to 10^{-5} . It was essentially the same for mice and for tissue cultures tested with a given specimen.

Initial infection of cultures produced severe degeneration of cells in some cultures, moderate degeneration in others and little or no detectable degeneration in still others. As a rule less severe degeneration was observed in cultures which had received a very large inoculum than in cultures which had received a small or moderate amount of virus. It is proposed that this paradoxical relationship between size of viral inoculum and extent of cellular degeneration is a result of auto-interference of noninfectious virus in the inoculum.

The growth curve for cultures inoculated with a moderate amount of virus shows a 24-hour latent period followed by a high peak in viral multiplication at approximately four days. The growth curve for virus in cultures inoculated with a very large amount of virus is a broad flat curve showing a suppression in virus multiplication which has been attributed to auto-interference.

Challenge inoculation of previously infected cultures showed little or no detectable degeneration in cultures which still carried active virus at the time of challenge and in some cultures which had recently lost virus. Mild to severe degeneration occurred in some of the cultures which had recently lost active virus and in all of the cultures which had lost virus at least four months earlier.

Significant degeneration of cells occurred in cultures in which virus reappeared after removal of antiserum following a 21 to 38-day period of exposure to antiserum. This degeneration was accompanied by considerable viral proliferation during the first week after removal of antiserum. No significant degeneration of cells occurred in cultures in which virus failed to reappear.

The reappearance of virus in the fluid phase of cultures after exposure to low titer antiserum may have been due to incomplete neutralization of extracellular virus; or the virus may have been carried within cells during this period. The permanent

disappearance of virus when cells were subcultured in the presence of antiserum suggested that the virus was not carried within rapidly dividing cells.

From the data available, the most plausible explanation for the persistence of western equine virus in cultures of L strain cells appears to be based on the auto-interference phenomenon. An initial inoculum of mouse brain virus is estimated to contain 100 or more noninfective virus units for each infective virus particle. Following multiplication and release of virus there is progressive inactivation of virus and accumulation of inactive virus in the tissue culture fluid. This presumably provides a supply of interfering agent which is picked up by most cells. Cells which contain inactive virus are temporarily immune to active virus by virtue of auto-interference. As these cells multiply and lose or destroy the inactive virus particles they again become susceptible. Whether susceptible cells become infected and produce virus or whether they become protected by the addition of inactive virus depends on the ratio of active to inactive virus in the tissue culture fluid. This mechanism provides a source of susceptible cells over long periods of time.

Treatment of an infected culture with antiserum removes the noninfective virus and leaves the cell population highly susceptible to either virus which it subsequently releases, or to virus introduced from an outside source.

137 pages. \$1.71. MicA 55-255

PARTIAL PURIFICATION OF CELLULASE PRODUCED BY THE WOOD-ROTTING BASIDIOMYCETE, POLYPORUS PALUSTRIS

(Publication No. 10,411)

Harry Hiroshi Higa, Ph.D.
Syracuse University, 1954

The objective of this study was to obtain cellulase, produced by Polyporus palustris, a brown wood-rotting Basidiomycete, in a purified state. The accomplishment of this purpose involved production, methods of detection, purification, concentration, and possible crystallization of the enzyme.

The medium employed for the production of cellulase by this organism was a modification of a menstruum developed by previous investigators in this Department. It was termed "Medium Cel". The medium consisted of inorganic salts, glycerol as a source of carbon, glutamic acid as a source of nitrogen and thiamin. All work was carried out in submerged culture at 28°C.

Polyporus palustris was selected because it

produced less pigment than certain other wood-rotting fungi, which simplified purification procedures. Under the conditions of the experiment, cellulase production was maximum at the end of 15 days. A pH of less than 2 was found to exert an unfavorable effect on the production of enzyme. Thiamin at 0.01% concentration stimulated enzyme production. Glutamic acid was a better nitrogen source than ammonium nitrate in the production of cellulase. Glycerol was employed as a carbon source because it does not exist in a crystalline state, nor does it interfere with activity measurements.

The optimum pH for determining cellulolytic activity was pH 4.4; Clark and Lubs buffer was found to interfere less with activity measurement than certain other buffers. The substrates employed were non-treated Whatman No. 1 filter paper, orthophosphoric acid-treated Whatman No. 1 filter paper, and carboxymethyl cellulose(50 T). Quantitative determination of cellulase was based on the reducing substances produced by the action of the enzyme on the above cellulosic substrates. The Somogyi iodometric glucose test was employed for the determination of reducing substances. The results were expressed as mg/ml reducing substances.

Purification of the enzyme was accomplished by a combination of procedures. In order to select appropriate ion-exchange resins, several cationic and anionic resins were investigated. The enzyme was not appreciably retained by the cation exchange resins but was held in the anion exchange resins. Subsequent elution of the anionic resin with 10% sodium chloride, followed by dialysis of the eluate, resulted in an appreciable loss of enzymic activity. Because of this loss, it was decided to omit the use of the anionic resin. Consequently, only Nalcite HCR, a cation exchange resin, was used to remove cation impurities. This was followed by dialysis in a graded collodion membrane tube, selected for its capacity to retain enzyme while allowing the diffusion of acids and salts to take place. The loss of enzyme by dialysis was not marked.

Concentration of the enzyme, preserved with 0.1% toluene, was attained by evaporation, in an air current, of enzyme solution previously purified by ion-exchange and dialysis. A forty-fold concentration was obtained and a proportional increase in enzymic activity was noted when filter paper was used as the cellulosic substrate.

The concentrated enzyme was chemically precipitated with absolute ethanol (pre-cooled to -15°C) for further purification. A white precipitate resulted. Subsequent solution of the precipitate in Clark and Lubs buffer at pH 4.4, concentration by pervaporation, and evaporation from a watch-glass resulted in the formation of two types of crystals. These procedures were performed at 4°C . One of the types of crystals observed was relatively small and rectangular. These crystals contained protein and exhibited cellulolytic activity as demonstrated by the formation of reducing substances from cellulosic substrates. The other variety of crystal, which was large and irregular, was found to be a mixture containing enzyme and buffer salt.

85 pages. \$1.06. Mic 55-12

FACTORS LIMITING TOTAL GROWTH IN BACTERIAL CULTURES

(Publication No. 10,697)

William Raymond Lockhart, Ph.D.
Purdue University, 1954

Major Professor: D. M. Powelson

A strain of bacteria will not grow when streaked on a nutrient agar or gelatin medium containing a large number of its own viable cells. From a comparative study of this phenomenon of "staling" with representative bacterial species from the genera Escherichia, Aerobacter, Bacillus and Micrococcus, it was concluded that the autoinhibitory effect of staled media is not specific. A relationship was demonstrated between the staling ability of any strain and its sensitivity to staling by other strains, and between the staling ability and reducing capacity of an organism.

No inhibitory substances were found in cultures of the test organisms. Although the degree of inhibition by staled media is related directly to the number of viable cells present, the inhibition is not a result of "direct antagonism" by those cells. The inhibitory state which prevails in staled agar appears to be analogous to the stationary growth phase in broth cultures.

In cultures of Escherichia coli in a synthetic medium under various environmental conditions, there was observed in cells at the onset of the stationary phase a spectrum of cytological and physiological changes similar to those manifested by cells in the "young" culture. Analyses of culture fluids showed that the stationary phase is reached in aerated cultures at a time when the limiting nutrient material is still available, and substrates continue to be utilized for a period thereafter. There results an interval of growth without cell division which is marked by changes in cell size, nucleic acid content, RNA/DNA ratio, phenol sensitivity and respiratory activity.

The per cell concentrations of substrate at which reproduction and growth cease were found to be correlated with the staling ability and reducing capacity of an organism. This permits an explanation of staling as a competition for available nutrients between organisms which differ in the amount of a limiting substrate required for cell division.

It is suggested that reproduction ceases in a bacterial culture when there is reached a chemical equilibrium between the available substrate and certain metabolites in the reaction series leading to cell division. Enzyme systems susceptible to different equilibria continue to function and utilize most of the remaining nutrient. There results a series of cellular changes which may be analogous to differentiation in the tissues of multicellular organisms.

Information is discussed which indicates that reproduction may cease in the cells of bacteria and other forms of life as a result of similar chemical equilibria. The reducing capacity of cells, as well as certain physical factors, are known to affect these equilibria and may serve as clues to the problem of

determining the actual metabolic mechanisms involved in the control of cell division.
83 pages. \$1.04. MicA 55-256

STUDIES ON THE TERRESTRIAL
FRUITING MYXOBACTERIA
(Publication No. 10,771)

Maude Elva Loebbeck, Ph.D.
University of Washington, 1954

The life cycles of Myxococcus fulvus and several other species of fruiting terrestrial myxobacteria were studied. Germination was found to take place by elongation of the microcyst. In some cases it resembled budding. The tips of the elongated cells were rich in lipid-like substance. The nucleus was a single oval or rod-shaped body. The young vegetative cells contained several nuclear structures which were usually connected. As vegetative growth ceased, the nucleus became a single bi-lobed structure, or an oval or elongate body, with edges entire. The pre-microcyst cells were flat and oval with a single, central nucleus. The mature microcyst was spherical and consisted of a thin outer coat, a thick inner coat and a central core. The central core consisted of a nucleus and cytoplasm.

The nutrition and metabolism of the fruiting terrestrial myxobacteria were studied using a mutant strain of Myxococcus virescens which could grow dispersed in liquid media. Cells of Escherichia coli, tryptone, casein hydrolysate or a mixture of amino acids could serve as substrates for the growth of this organism. Although ordinary manometric data was inconclusive it was found by using isotopic tracers that glucose, starch and the cytoplasmic portion of E. coli were oxidized. Cell walls of E. coli were not oxidized. When the cytoplasmic portion of E. coli was fractionated, it was found that the lipid and protein fractions were oxidized, but the nucleic acids were not.

Extracellular enzymes were demonstrated in the culture filtrate of M. virescens which would solubilize the protoplasts of heated E. coli and B. megatherium. Viable E. coli, or E. coli treated with ultraviolet light, aureomycin, streptomycin or iodine were not attacked. The cell walls of these eubacteria were also unaffected.

152 pages. \$1.90. MicA 55-257

AN INVESTIGATION OF POTENTIAL
OIL-PRODUCING WESTERN SOILS
FOR NEW BACTERIAL ANTAGONISTS

(Publication No. 10,775)

Ivan Wendell Rowland, Ph.D.
University of Washington, 1954

Two hundred seventy-five soils were investigated for new bacterial antagonists. Two hundred fifty of the soils were collected from potential oil-producing areas of Idaho and Wyoming. The other 25 soils were chosen at random from desert, alpine, and cultivated areas in the states of Montana, Nevada, Washington, and California.

The soils were cultured to obtain as many bacterial, mold, and actinomycete colonies as possible. The isolates from this processing were screened to separate the antagonists. Pure cultures of these isolates were secured by the cross streak method. Antibacterial spectra were established for the producers of antibacterial metabolites. Sixty of the antagonists were studied to learn how each of them could be grown in the submerged culture fermentation process. Pharmacological investigations were conducted on two antibiotic principles which were produced in the fermentation process. Promising antibiotic producers were forwarded in pure culture to the E. R. Squibb Institute for Medical Research for further confirmatory studies.

It was learned that the potentially oil-rich soils of Idaho and Wyoming yield many microorganisms which are capable of producing new antibiotics. One hundred ninety-three antagonists were isolated from 275 soils and 85 of the antagonists were successfully cultured and retained in viable form. Twenty-one of the antagonists were successfully grown by the shake-flask fermentation process. A suitable medium was found for the growth of each of the 21 antagonists.

One of the antibacterial metabolites, A-125, has been obtained as a partially purified hydrochloride showing an activity of 1300 E. coli dilution units per mg. A method is given for the growth, extraction, and concentration of this antibacterial principle. In vitro and in vivo studies show that the A-125 antibiotic has an activity against gram positive, gram negative, and acid fast bacteria. No activity is indicated against the mouse meningopneumonitis virus or against the rickettsia of Rocky Mountain Spotted Fever. The antibiotic principle is pH and heat stable.

Certain of the details necessary for the growth, testing, and purification of a second antibiotic, A-8, are given.

68 pages. \$1.00. MicA 55-258

BIOLOGY - GENETICS

A LIMNOLOGICAL STUDY OF THE SEASONAL VARIATIONS OF PHYTOPLANKTON POPULATIONS

(Publication No. 10,758)

George Cameron Anderson, Ph.D.
University of Washington, 1954

The limnology of five different lakes in Washington was studied in relation to the physical and chemical conditions which influence the growth and distribution of the phytoplankton. Specific identifications were made of the phytoplankton organisms in each lake and the seasonal succession of species established. The lakes selected for study were Chase Lake and Hall Lake, dystrophic lakes in Snohomish County; Lake Washington, a large, deep lake in King County; Lake Lenore and Soap Lake, highly saline lakes in the Lower Grand Coulee.

The lakes were sampled at two or three week intervals beginning in the fall of 1949 and sampling continued for a period of at least one year. Morphometric conditions were determined and routine sampling included measurements of temperature, transparency, oxygen, pH, alkalinity, phosphate, nitrite, nitrate, chlorophyll concentration and quantitative samples of phytoplankton. Two years of study were made in Hall Lake and Chase Lake and an annual investigation of photosynthesis and measurements of light penetration were made in Chase Lake.

Chase Lake had a low annual heat budget and was strongly stratified both thermally and chemically during the summer. Dissolved nutrients were generally low. The penetration of light was highest in the orange region of the spectrum. The phytoplankton population was rich in species and showed erratic fluctuations but a low productivity was indicated by the hypolimnetic oxygen deficit. The seasonal succession of the major groups of phytoplankton and the species comprising them is described. The major groups were the Pyrrhophyta and the Euglenophyta. The factor of greatest importance in limiting photosynthesis in the surface waters was temperature whereas light was the important factor in the entire lake. The lake was estimated to be .026 percent efficient in converting solar radiation into organic matter.

Lake Washington is a soft water lake, relatively low in dissolved nutrients and on the basis of the hypolimnetic oxygen deficit is in the early stages of eutrophy. The heat budget was moderately high for a large deep lake. The phytoplankton population was varied and showed a spring and late summer bloom. The dominant groups were the Chrysophyta and the Pyrrhophyta.

Lake Lenore is an unstratified, shallow, highly saline lake. Dissolved nutrients were high and showed erratic variations during the summer. The phytoplankton population was taxonomically simple and was made up mainly by two species of diatoms, Amphora sp. which formed the spring bloom and Chaetoceros elmorei which made up the late summer bloom. Evidence of strong grazing by zooplankton was found.

Soap Lake is a relatively deep, strongly stratified, highly saline, meromictic lake. Temperature conditions were dichothermic and the heat budget was remarkably low. Soap Lake had the highest nutrient content, especially in the monimolimnion. A winter maximum and a summer minimum was observed in the phytoplankton. There was evidence of dilution of the lake in recent years and a change in the biota has been noted.

Hall Lake is a dystrophic, meromictic lake. The phytoplankton population was moderately rich in species and was the largest population of those studied. The Cyanophyta, made up mostly with Oscillatoria agardhii, was the dominant group.

A comparative discussion of the physical and chemical conditions and of the phytoplankton populations of the lakes is given. Comparisons are made of the size of the standing crops and of the seasonal fluctuations in the species composition of the populations. Attempts are made to relate the growth and distribution to the physical and chemical conditions.

273 pages. \$3.41. MicA 55-259

A CYTOGENETIC STUDY OF SEGREGATION IN AUTOTETRAPLOID MAIZE INVOLVING GENES AT DIFFERENT DISTANCES FROM THE CENTROMERE

(Publication No. 10,742)

Mohamed I. El-Ghawas, Ph.D.
Cornell University, 1955

Genetic segregation for the loci bm_2 in chromosome I; B and lg_1 in chromosome II; cr_1 and a_1 in chromosome III; su_1 in chromosome IV; C, wx and I in chromosome IX and g_1 in chromosome X, was studied in stocks of autotetraploid maize. Cytological observations were made at diakinesis of microsporocytes collected at random from field cultures. bm_2 and g_1 were variable in expression, which resulted in faulty classification. Consequently some of the values of α obtained for these 2 loci were negative values. The α values obtained for other loci were; a_1 .1040 to .3980; su_1 -.0330 to .0880; C .0530 to .4600. The negative values obtained for su_1 as well as the

single α value obtained for wx are explained as simple variation in α which is very small as these 2 loci apparently are very close to the centromeres in their respective chromosomes. The range of variation in the value of α obtained for single loci may be due to environmental, and possibly heritable factors affecting chiasma frequencies and crossing over. The values of α calculated from combining the data from selfing and backcrossing a single genotype with Mather's method (1935b) are: $.1773 \pm .0608$ for $Lg^1 lg^3$; $.2611 \pm .0290$ for $A^1 a^3$; $.2386 \pm .0176$ for $A^2 a^2$; $.0181 \pm .0360$ for $Su^1 su^3$; $.0113 \pm .0158$ for $Su^2 su^2$; $.3200 \pm .0424$ for $C^1 c^3$; $.1890 \pm .0173$ for $C^2 c^2$. Other values from uncombined data are; $.2090 \pm .0655$ for $B^2 b^2$ backcrossed; $.2384 \pm .0632$ for $Cr^2 cr^2$ selfed; $-.0216 \pm .0400$ for $Wx^1 wx^3$ selfed; $.1420 \pm .0608$ for $I^1 i^3$ backcrossed; and $.2050 \pm .0332$ for $I^2 i^2$ backcrossed. The α values obtained for these 8 loci are in general agreement with their supposed position relative to the centromeres in their respective chromosomes. The ratios of segregation observed for the different loci were also tested for their goodness of fit to Muller's and Haldane's ratios. The loci su_1 and wx approached chromosome segregation ratios while lg_1 , B , cr_1 , a_1 , C and I approached chromatid segregation ratios. Cytological examination at diakinesis of microsporocytes from a hundred plants belonging to a hundred cultures selected at random from 370 field cultures revealed that the chromosome number ranged from 36-47. Two maternal diploid plants with $2n = 20$ were also observed. The frequency distribution of the different chromosome numbers was 2 with 36, 1 with 37, 6 with 38, 4 with 39, 57 with 40, 12 with 41, 11 with 42, 1 with 43, 2 with 44, 1 with 45, 0 with 46, and 1 with 47 chromosomes. From the analysis of chromosome association at diakinesis it was determined that all of the 40-chromosome plants examined had varying numbers of quadrivalents and bivalents and occasional trivalents and univalents. In the aneuploid plants disomes, trisomes, pentasomes and hexasomes were present, and their approximate frequency was determined. Accordingly the non-tetrasomic ratios appearing in the segregating progenies were explained as trisomic, pentasomic, hexasomic, and possibly higher types of inheritance. The values of α obtained for the different loci studied could not be used in calculating accurately the genetic map distance between these loci and the centromeres as the value of α is apparently affected by variables that could not be measured.

201 pages. \$2.51. MicA 55-260

HERITABLE SOMATIC INSTABILITY IN
NICOTIANA CULTURES DERIVED FROM A
HYBRID OF *N. LANGSDORFFII* BY *N. SANDERAE*

(Publication No. 10,752)

Seaward A. Sand, Ph.D.
Cornell University, 1955

Variegation is defined and a review of the literature is presented.

The origin, following an interspecific hybridization, of *Nicotiana* cultures showing flower-color variegation is related.

The variegated-1 phenotypes of speckled, sectorial, rare sectorial, and dark-speckled light-speckled sectorial are described and compared with the phenotype of variegated-3.

Data are presented to show that intensity of speckling varies among sister plants, increases at colder temperatures and increases with age of flower. It also has, however, a demonstrable heritable component.

Frequency of sectoring varies among plants. An apparent discontinuous distribution of sector-size supports the interpretation that the sectors delineate ontogenetic cell lineages.

The frequent phenotypic changes observed in clonal cultures are described.

Genetic data are presented which support the hypothesis that variegated-1 individuals possess a recessive unstable allele, thus differing from *Sanderae*, which contains the dominant stable allele S at this locus. Trisomic ratios suggest that the position of the S locus may be on chromosome 2 of the complement. Genetic tests indicate that the S locus segregates independently of a known basic anthocyanin color factor, P.

Genetic data are presented to show that the variegated-1 phenotypes of speckled, sectorial, and rare sectorial are different genotypes. These genotypes are interpreted as dependent in expression upon two unstable alleles at the S locus, as follows: s/s = speckled, S-s/S-s = rare sectorial, and S-s/s = sectorial.

Studies are designed to estimate the magnitude of possible sources of variability in the observed segregations. It is concluded that there exists no detectable differential pollen tube competition between these gamete types, and that the segregations are repeatedly obtainable from the same seed-lot under the cultural conditions employed. There is no evidence for differential seed-pan competition among segregants.

It is shown that speckled plants may differ from each other in the frequency of dominant-allele-bearing individuals occurring in their progeny. Data also are presented for two sister sectorial plants which show correlation between their phenotypic frequency of sectors of recessive somatic tissue and the respective frequency of recessives in progeny from self pollinations.

Comparative genetic tests of flowers from chimeral plants and clones support the hypotheses that (1) periclinal chimeras exist in the variegated-1 culture, and (2) the sectoring events observed in the

variegated-1 phenotypes reflect alterations in the genotype which are genetically demonstrable if they occur early enough in development and in germinal tissue.

Preliminary cytological studies of variegated plants have shown a low frequency of somatic bridges at late anaphase, and the presence of chromosome fragments in microsporocytes at first anaphase.

A controlled temperature experiment with a clone of variegated-3 indicates that lower temperatures during development result in a decreased sectoring frequency, an increased epidermal cell size, and an increased petal size.

Chronic gamma irradiation of members of the same clone of variegated-3 has revealed a differential response to radiation of the purple-sector and the speckled-sector systems in somatic tissue. At

low dosage rates the speckled system gives sector increments ten times those of the purple system.

It is interpreted that the deviations from modal breeding behavior and from Mendelian expectation, considered in conjunction with evidence that the deviations do not represent sampling errors, require that s and S-s be unstable states of the variegated locus. Apparently reversible changes between the s and S-s conditions resemble inhibition and release from inhibition of a locus critical to pigment synthesis. Since neither condition has been observed to be permanent nor to give rise to stable derivatives, it is considered unlikely that a continuing chromosomal aberration mechanism is involved. Thus, pending adequate cytological studies, instability of expression is considered to be a characteristic of the variegated locus itself. 138 pages. \$1.73. MicA 55-261

BOTANY

EFFECT OF MINERAL NUTRITION ON BUD GROWTH IN TOMATO

(Publication No. 10,405)

Abdelmeguid Mahmoud Mohamed Badawi, Ph.D.
Syracuse University, 1954

A study was undertaken of the relation of mineral element variations to bud growth in the tomato. Seeds of the Bonney Best variety of tomato were sown in vermiculite during the time from the spring of 1952, until the fall of 1953. Sixteen days after sowing the seedlings were transplanted into different nutrient media solidified with agar. Fourteen days later the seedlings were decapitated. Twelve days after decapitation the diameter of the callus growth and the length of the first axillary leaf were measured; the axillary shoots were then removed. The time required for the appearance of adventitious buds in the callus tissue was registered beginning with the time of removal of the axillary buds. In all experiments (except one) the diameters of the stems and buds were measured at one-day intervals following decapitation. This was done by making sections at the cotyledonary attachment level regions after aspirating, fixing, and embedding these parts in paraffin. Pictures of these sections were obtained and diameters of stems and buds were measured from the negatives. Calculations of percentages of bud/stem areas were also made.

Five different experiments were run. They were designated as:

- 1) High and low elements
- 2) Deficiencies of elements
- 3) Variability of potassium
- 4) Variability of nitrogen
- 5) Variability of phosphorus

With regard to Experiment No. 1 high phosphorus gave the best growth of callus tissue, and highest percentage of bud/stem area. Shive's solution resulted in the best growth of the first leaf of the axillary bud and the shortest time required for the appearance of adventitious buds. High potassium gave the best area of both stem and bud. Low amounts of the elements mostly gave the lowest measurements.

In the case of element deficiencies the control solutions, Hoagland's and Shive's, gave the best callus growth, longest length of the first axillary leaf, and shortest time for the appearance of adventitious buds. Plants in a solution deficient in nitrogen grew only for a while, then died, while other seedlings in solutions deficient in other elements grew for a longer time.

It was found in Experiment No. 3 that a concentration of 44 p.p.m. of potassium was the best for growth of stem area, bud area, and shortest time required for appearance of adventitious buds. A concentration of 22 p.p.m. gave the highest percentage of bud/stem area. A concentration of 176 p.p.m. gave the best growth of callus and length of first axillary leaf.

With regard to nitrogen, concentrations of 156.8 p.p.m. of nitrogen produced the best growth of stem, bud, percentage of bud/stem area, callus growth, length of first leaf of axillary buds, and shortest time required for appearance of adventitious buds.

In case of Experiment No. 5 it was found that a concentration of 120 p.p.m. of phosphorus gave the best growth of callus tissue, length of first axillary leaf, and shortest time required for the appearance of adventitious buds. A concentration of 80 p.p.m. of phosphorus gave the best growth for stem, bud, and highest percentage of bud to stem area. In general no element or combination or concentration was found which stimulated bud growth exclusively.

No significant differences in growth of tomato

plants or of buds were observed between effect of the two levels of light intensity although high light showed somewhat better growth.

Red staining bodies were found in the meristematic tissues. They were observed also in cells of bud tissue. The nuclei disintegrate before the nucleoli

and it is seen that it is the freed nucleoli which form the red staining bodies.

The axillary buds did not form before decapitation. After the seedlings were decapitated the axillary buds started to appear.

158 pages. \$1.98. MicA 55-262

CHEMISTRY

CHEMISTRY, ANALYTICAL

EQUATIONS FOR LIMITING CURRENTS AT MICROELECTRODES

(Publication No. 10,759)

Glenn Lawrence Boaman, Ph.D.
University of Washington, 1954

Platinum microelectrodes have been used in many polarographic determinations. The utility of this method has been limited by the lack of an expression relating the limiting current to the diffusion coefficient of the oxidizable or reducible species, and the velocity of the electrode.

An experimental expression has been obtained showing that the limiting currents at rotated platinum wire microelectrodes are proportional to the 0.7 power of the diffusion coefficient and to the 0.5 power of the electrode velocity, if the solution is stirred only by the wire electrode. Stirring of the solution by the glass tubing holding the electrode was made negligibly small by using a wire rotated parallel to the drive shaft and displaced from the center of rotation, instead of rotated perpendicular to the shaft, as employed by previous investigators. Viscosity is shown to have negligible effect on the current, except as it influences the diffusion coefficient. A precision of plus or minus one-tenth percent has been obtained for limiting current measurements of the oxidation of iodide ion, reduction of triiodide ion and the reduction of iodate ion.

A precise method was also developed for polarographic measurements with stationary platinum wire microelectrodes. By using a stable electronic integrating and timing circuit, the current at the electrode could be integrated over time intervals of three-tenths to fifteen or more seconds. For currents integrated between the time limits of zero and one to three seconds after applying a potential to the electrode, a precision of measurement within plus or minus one-half percent was obtained. The integrated current is shown to be proportional to the first power of concentration, the one-half power of the diffusion coefficient, and the one-half power of the integration time for these short times of integration, as would be expected from linear diffusion theory.

84 pages. \$1.05. MicA 55-263

CHEMISTRY, BIOLOGICAL

STUDIES ON ASCORBIC ACID SYNTHESIS IN APPLE LEAVES

(Publication No. 10,738)

Edward Anton Maria Asselbergs, Ph.D.
Cornell University, 1955

A standardized method for following changes in the ascorbic acid content of apple leaves was set up. This included a technique for sampling of apple leaf discs by means of a detached leaf method. A number of substances, sorbitol, sorbose, glucose, fructose, fructose-1,6-di-P, sucrose, glucuronic acid, glucuronolactone, Na, K and Ca salts of glucuronic acid, guluronolactone, 2-keto-1-gulonic acid, galacturonic acid, glucosecycloacetoacetic acid and its ethyl ester, pyruvic acid, succinic acid, malic acid, citric acid, 1-threonic acid lactone, oxalic acid were introduced into the apple leaf via the petiole. Their effect on the ascorbic acid content of apple leaves, under several conditions of light intensity, CO_2 concentration of the atmosphere and temperature were studied.

With high light intensity (i.e., 1700 foot candles) at room temperature, an increase in the ascorbic acid content of apple leaves was obtained with glucuronolactone, glucose and fructose. These increases never exceeded 50% of the original ascorbic acid content of the experimental leaves. However, under the same conditions, the water control gave increases in ascorbic acid amounting to 30-40%.

Organic acid solutions, adjusted with sodium hydroxide to pH 3.5 or 5.5, caused decreases in the ascorbic acid concentration; concomitantly, an increase in the 2,3-diketo-1-gulonic acid content occurred. No evidence was found that ascorbic acid is related to an organic acid metabolism typical for succulents.

From experiments with C^{14} labeled oxalic acid and unlabeled 1-threonic acid gamma lactone, no evidence could be obtained that oxalic acid and 1-threonic acid lactone will condense to form 2,3-diketo-1-gulonic acid. Experiments with C^{14} labeled CO_2 indicated the light sensitivity of ascorbic acid formation. The results obtained showed, however, that only certain step(s) in this formation are light sensitive.

During the study on the total acidity of apple leaves

the drastic effect of the conventional method for measurement of the total organic acid fraction, on the ascorbic acid content of the extract was observed. A considerable amount of ascorbic acid (up to 90%) was destroyed during a hot water extraction of apple leaves, but concomitantly an increase in the oxalic acid content of this extract occurred.

165 pages. \$2.06. MicA 55-264.

THE NATURE OF THE VOLATILE COMPONENTS OF VACUUM-STORED DEHYDRATED PORK AS DETERMINED BY AERATION TECHNIQUES AND CHROMATOGRAPHIC METHODS

(Publication No. 10,103)

Marvin Clifton Burnett, Ph.D.
University of Missouri, 1954

Supervisor: Charles W. Gehrke

Vacuum-stored dehydrated pork develops an off-flavor during storage at elevated temperatures and (or) storage for long time intervals. This off-flavor renders the product unfit for human consumption in many cases. Chemical methods are needed in order to determine the nature of the volatile components causing the off-flavor. The determination of the nature of the volatile components could lead to an objective evaluation of the condition of the meat: It would also enable one to ascertain what fraction of the meat is responsible for the development of these undesirable constituents. The identification of the individual molecules present in the volatile fractions would indicate what precautions need be observed in order to prevent the off-flavor development.

Aeration methods were adopted for the qualitative and quantitative determinations of the volatile components of dehydrated pork. A certain volume of an inert gas was passed through a system and the resulting gases were collected in suitable chemical absorbents. The volatile components of dehydrated pork were found to be basic in nature and to exhibit great reducing properties. Total basicity determinations were carried out by aerating into 0.02 N sulfuric acid and titrating the excess acid with 0.02 N sodium hydroxide: The determination of volatile reducing substances was carried out by aerating into alkaline permanganate and titrating the excess permanganate with ferrous ammonium sulfate and ceric sulfate.

The aeration of 10 gram samples of dehydrated pork yielded results which showed that the volatile components of the -20° F. stored meat contained as great as or greater reducing power than the volatile components of the 100° F. or 160° F. stored meat.

Aerations of eight ounce cans of meat by use of a specially designed can-puncturing device gave results which were better for comparing the conditions of the different storage-treated samples. The 160° F. stored sample exhibited 125.2 microequivalents of reduction and 0.18 milliequivalents of basicity, as

compared to 39.1 microequivalents and 0.74 milliequivalents for the sample stored at -20° F.

The aeration of one pound of dehydrated pork previously stored at 100° F. for 19 hours into acidified ethanol resulted in the formation of a small amount of hydrochloride salt. The residue was subjected to paper chromatographic analysis. An R_f value of 0.20 was obtained for both the unknown hydrochloride and ammonium chloride. This was very good evidence for the existence of ammonia in the volatile fractions of dehydrated pork samples.

The volatile material from the dehydrated pork formed hydrochloride salts on aerating into acidified ethanol cooled by ethanol-dry ice, but only 0.1 mg. of salt was obtained on aerating 1125 grams of meat previously stored at 160° F. for one week. This salt had a melting point greater than 285° C. which is higher than the melting points of the hydrochloride salts of the lower amines.

Using aeration techniques in conjunction with a colorimetric scheme, a positive test for carbonyls was obtained from the volatile fraction of meat previously stored at 160° F., but not from the meat stored at -20° F.

Total mono-carbonyl determinations of benzene extracts of meat were carried out using column chromatography in conjunction with a colorimetric scheme. The carbonyl content was shown to increase with an increase in storage temperature.

Acetaldehyde was shown to be present in dehydrated pork samples stored at both -20° F. and 94° F. The carbonyl compound was isolated by aerating 10 pound samples of meat stored in specially designed flasks. Nitrogen was used for aerating, and the exhaust gases were collected in solutions of 2,4-dinitrophenylhydrazine in 2 N hydrochloric acid. The acetaldehyde derivative was characterized by melting points, mixed melting points, paper chromatography, and absorbence spectra. The investigator isolated 23.5 mg. of acetaldehyde 2,4-dinitrophenylhydrazone from the meat stored at 94° F., but only one mg. of derivative was isolated from the -20° F. stored sample.

The possibilities of the formation of acetaldehyde from the oxidation of linoleic acid, from the decarboxylation and deamination of alanine, and from the decarboxylation of pyruvic acid are presented.

Suggestions for future work on this problem are given.

107 pages. \$1.34. MicA 55-265

CALCIUM METABOLISM IN DOGS, WITH RESPECT TO AGE AND EXERCISE

(Publication No. 10,757)

Robert Louis Wanner, Ph.D.
Cornell University, 1955

The problem of calcium metabolism and the maintenance of the skeleton during the declining period of life are probably far more intricate than during the

growing period because of chronic difficulties. The endocrines function differently; appetite often fails, resulting in decreased food intake; the body often is given little exercise; chronic diseases slowly encroach upon the normal functioning of many of the organs and modify equilibria within the body. Studies on the effect of age on calcium metabolism in dogs by means of balance and absorption sacrifice studies, augmented by manipulation of the dietary components and exercise, was investigated.

Radioactive calcium was used in a sacrifice study on twenty dogs to determine the effect of a dietary fat and the age of the animal upon the metabolism of calcium. Equal numbers of pups and adults were fed either a high- or low-fat diet containing Ca^{45} and Cr_2O_3 was included at 1% of the dry matter content. Following the feeding of the test meal after a 48-hour fast, the animals were sacrificed. Analytical data, while not completely conclusive, indicated that a high level of dietary fat, in the form of lard, augmented the absorption of calcium from the gastrointestinal tract into the blood. It was reaffirmed that calcium is absorbed into the blood more rapidly by younger animals. The Cr_2O_3 ratio method of determining the site of nutrient absorption within the alimentary tract was found to be not applicable to dogs fasted for 48 hours.

The inclusion of approximately 1.1% of ZnO in a good commercial dog meal in an absorption sacrifice study with seven dogs produced no deleterious effects beyond a slight depression of appetite during a 6-day preliminary feeding. pH determinations on the contents of the alimentary tract indicated that the zinc oxide produced only slight changes in pH values. Analytic data indicated that the zinc oxide caused a decrease in calcium absorption and an increased phosphorus absorption.

Calcium balance trials were conducted with six old dogs, averaging 11.4 years of age. During eight balance periods and while being trained on an exerciser, the animals were fed a cooked horsemeat-dry cereal diet in which the fat, Ca/P ratio and levels, could be adjusted.

Three balance trials under resting conditions with the dietary calcium adjusted to approximately 25, 50, and 100 mg Ca/Kg body weight per day, and lard as the fat source, showed no negative calcium balances.

Two balance trials under resting conditions in which cottonseed oil was 15% of diet, and calcium intake about 130 mg $\text{Ca}/\text{Kg}/\text{day}$, showed nearly equal mean calcium percent retention on diets to which granular soya lecithin or a silicone emulsion had been added. The retention was more than double that of a comparable diet with lard and no lecithin or silicone added.

Six old dogs were maintained on the horsemeat diet and trained on a power driven exerciser. During balance trials, the animals were exercised once daily for 40-70 minutes prior to feeding. Calcium retention was increased by exercise when lard was the fat source and calcium intake was about 125 mg/Kg of body weight per day. Paradoxically, when the cottonseed oil was the fat source and lecithin added, calcium

retention dropped to one-fourth of the level which had been determined for a similar diet in the resting trial. The cotton-seed oil-silicone emulsion supplement showed a decreased calcium retention in exercise but the reduction was only half as great as for the lecithin-exercise balance trial.

Twelve young adult Beagles were used in balance studies of the effects of a hard- (63°C . m.p.) and soft-fat (lard) on calcium metabolism. In 3 of 4 resting balances, lard effected an increase in apparent calcium and phosphorus retention over hard fat. In exercise balances an increase in apparent calcium and phosphorus retention for both fats was probably attributable to exercise, but this effect was reversed when lecithin or silicone emulsion was added.

70 pages. \$1.00. MicA 55-266

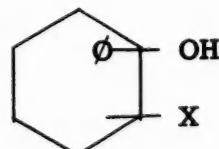
CHEMISTRY, ORGANIC

STEREOSPECIFICITY IN THE PINACOL-TYPE REARRANGEMENTS OF 1-PHENYL-SUBSTITUTED CYCLOHEXANOLS

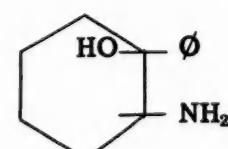
(Publication No. 10,799)

Seymour Schmukler, Ph.D.
Columbia University, 1954

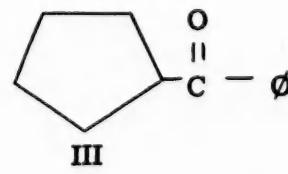
cis- and *trans*-2-Amino-1-phenylcyclohexanols (Ia and II) have been synthesized and their structures



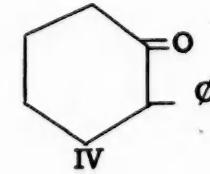
Ia, X = NH₂
Ib, X = Cl



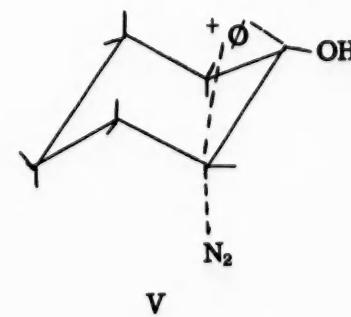
II



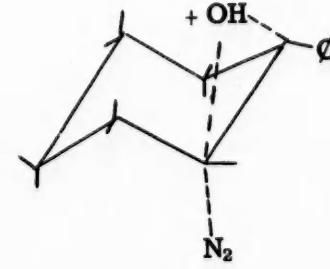
III



IV



V



VI

established. Ia, upon deamination with nitrous acid at 0° in 50% acetic acid gave a mixture consisting of 99% phenyl cyclopentyl ketone (III) (alkyl migration) and less than 1% of 2-phenylcyclohexanone (IV) (aryl migration). Similarly, *cis*-2-amino-1-p-methoxy-phenylcyclohexanol rearranged with 99% alkyl migration (ring contraction) and about 1% aryl migration.

In acyclic systems, phenyl appears to migrate at least as fast as alkyl and, in some systems, 10-100 times (methyl or ethyl). The relative retardation of phenyl migration by the cyclic system is thus estimated to be a factor of 10^2 - 10^4 . This retardation is attributed principally to steric strain in that transition state with a polar bridged phenyl (V).

cis-2-Chloro-1-phenylcyclohexanol (Ib) with silver oxide in boiling hexane (4 days) gave 68% of III and 22% of IV (based on unreacted starting material). An explanation of the difference in behavior of Ia and Ib is offered.

II with nitrous acid gave a small amount of III; but, principally, products which seem to have resulted from initially formed conjugate acid of 1-phenylcyclohexene oxide (VI). VI was prepared and shown to give these products under the deamination conditions.

122 pages. \$1.53. MicA 55-267

CHEMISTRY, PHYSICAL

INFRARED SPECTRA OF HDS AND H_2O_2 : ANALYSIS OF 6140 cm^{-1} BAND OF HDS

(Publication No. 10,763)

Glenn Arthur Crosby, Ph.D.
University of Washington, 1954

An infrared vibration rotation absorption band of HDS has been identified and measured under high resolution in the region 6040 to 6230 cm^{-1} . The rotational fine structure has been analyzed and a centrifugal distortion correction applied. The band has been identified as A type and assigned as $u_2 + 2v_3$, with the following inertial parameters giving the best fit of the spectrum: for the ground state $A = 9.743$; $B = 4.922$; $C = 3.232$ and for the excited state $A^* = 9.411$; $B^* = 5.019$; $C^* = 3.137$ (in cm^{-1}). The band center occurs at 6139.98 cm^{-1} .

An experimental investigation of D_2S has been made over the region 5200 to 11700 cm^{-1} with path lengths up to 120 atm ft. No absorption sufficient for rotational analysis was detected.

The infrared vibration rotation spectrum of H_2O_2 has been remeasured in the region of 10300 cm^{-1} under high resolution. Preliminary attempts to analyze the rotational fine structure were unsuccessful.

95 pages. \$1.19. MicA 55-268

THE PHYSICAL PROPERTIES OF ELECTROLYTIC NICKEL DEPOSITS FROM SOLUTIONS CONTAINING ADDITIONS OF VARIOUS ORGANIC SUBSTANCES

(Publication No. 9952)

John Wallace Pearce, Ph.D.
Michigan State College, 1953

The physical properties, appearance and surface roughness of Watts nickel solution deposits have been studied and compared with the properties obtained when small additions of organic substances were present in the depositing solution. Nickel deposits were obtained from a Hull-type cell which yields a wide current density range of metal deposition on a single cathode. The groups of organic compounds added to the Watts nickel solution included reducing carbohydrates, polymers, and unsaturated aliphatic compounds, carbonyl compounds, dyes and phenols. The effects on a Watts nickel solution deposit of single additions of these compounds, additions in the presence of 2,7-naphthalene disulfonic acid and, for the carbonyls compounds, additions in the presence of cobalt sulfate and a nickel organic acid salt were reported. Some exploratory data for predipping the cathode in a solution of a proven brightener or covering with filter paper previous to deposition in a Watts nickel solution was also reported.

Appearance tables have been constructed using the terminology suggested by "Metalfinishing Guide Book-Directory, 1950" for each general addition outlined and photographs of the appearance effects have been included. Surface roughness effects have been evaluated at 9.0 and 6.5 amp./sq. dm. Roughness data tables have been constructed to report the surface data and curves have been included as possible interpretations of the trends observed in the roughness data. A table of decreasing brightener strength based on optimum appearance effects has also been included.

Functionality of the organic molecule has been suggested as a vital requisite for desirable modification of the nickel deposit. Structural isomers of nitrophenol varied in effect on the deposit. This was observed less markedly in the base of the amino-phenols. Degree of unsaturation tended to be important and directly related to modifying of the deposit. The possibility of a *pi*-complex metallo-organic compound in the cathode layer was suggested. Trends toward some correlation between oxidation potential of the carbonyl compounds studied and their brightening properties were discussed and interpreted in view of a postulated metal hemi-acetal intermediate species. The views of Mathers, who proposed the theory of the importance of complex compounds in metal deposit modification, were considered qualitatively and extended to the use of organic additions for modifying a nickel deposit. Based on the items discussed, some favorable agreement was indicated. The results were not definitely concluded toward the view of Mathers, however, since adsorption phenomena were not eliminated as a possible explanation.

Two new brighteners, Monastral Blue and PVM/MA, were reported.

265 pages. \$3.31. Mic 55-13

**THE ELECTROLYTIC DECOMPOSITION
OF DILUTE AMALGAMS**

(Publication No. 10,750)

John Tolliver Porter, II, Ph.D.
Cornell University, 1955

With a view to possible extension of the use of mercury and amalgam electrodes in analytical chemistry, a study has been made of the electrolytic decomposition of dilute metal amalgams with particular attention being given to the completeness of decomposition and the general behavior of these electrodes when the decomposition is carried out: 1) at constant anode potential, 2) through a fixed resistance at constant applied potential, and 3) under the influence of an intermittently applied constant current.

It was found that the decompositions are complete and that a general understanding of the rates of the various modes of decomposition can be attained through considerations based on the Nernst equation and conventional concentration polarization terms.

There is an anomalous behavior under the influence of an intermittent constant current. In particular, the current efficiency is in general higher than would be allowed on the basis of diffusion limitation. This behavior can be successfully explained on the basis of a film of mercurous chloride which is formed during the passage of the current and then reacts during the interval in which the current is not passing. This explanation is supported by the behavior of the electrode following the interruption of the current and under conditions which prevent film formation.

On the basis of this high current efficiency, coulometric titrations of dilute amalgams have been devised, the accuracy of which give preliminary indication of giving a higher order of accuracy in trace analysis. A factorial study of the major variables involved in these titrations indicates that the limiting conditions for the accuracy of the method are not to be found in the usual electrochemical variables such as current density, but must apparently be sought in some non-electrical properties of the system.

Metals which do not form amalgams with mercury do not fit into the interpretational scheme used.

Finally, any quantitative predictions based on information obtained from other fields, such as polarography, are rendered hazardous by the fact that in the well agitated systems used there is a significant departure from the ideal reversibility observed in polarography or in other systems with stationary, unstirred electrodes.

60 pages. \$1.00. MicA 55-269

**THE INFLUENCE OF MAGNETIC FIELDS
ON ELECTROLYTIC CONDUCTION**

(Publication No. 10,751)

Allen Garrison Potter, Jr., Ph.D.
Cornell University, 1955

This investigation concerns the behavior of direct-current-carrying electrolytic conductors subjected to the influence of magnetic fields. The subject has been one of long-standing confusion among many previous investigators. Cell constructions were such that the magnetic fields were applied only to a conduction tube between two electrode compartments. Cells with horizontal and with vertical conduction tubes were employed. The electrolyte systems; copper sulfate-sulfuric acid, nickel chloride-boric acid, sodium sulfate, and sulfuric acid were included in the study.

Measurements were made of the changes in cell current at essentially constant voltage with application of the magnetic field. These current changes were taken as a measure of the change in overall direct current conductivity of a particular cell. Such determinations were made over a range of current densities and magnetic field strengths and for several concentrations of each electrolyte considered. The cells were run with the conduction tubes open; isolated from the electrode compartments by means of glass wool plugs; and packed completely with glass wool.

It was found that the application of magnetic fields to current-carrying cells caused disturbances which affected their overall conductivities. The magnetic field caused a bulk agitation of the solutions which may be attributed to an unbalanced motor action on the current carriers which is stronger in the strong portions of the field. When this stirring action was permitted to extend into the electrode compartments, it upset concentration and polarization effects normally associated with the passage of direct current, causing decreases or increases in conductivity, depending on the electrolyte system.

When the conduction tube was isolated from the electrode compartments by means of glass-wool plugs, and a cell was operated in a cooling bath, the stirring action brought about by the magnetic field served to improve the heat transfer to the cooling medium, causing a decrease in the average cell temperature and a corresponding decrease in overall cell conductivity. Packing the conduction tube prohibited the stirring action, and the conductivity effect was greatly diminished.

In the case of a cell with a horizontal conduction section, the magnitude of the changes depended upon which direction, with respect to gravity, that the field deflected the current paths. Without the magnetic field the horizontal section contained temperature and current gradient due to natural convection. This condition favored the transfer of heat to the surrounding medium. An applied magnetic field, depending upon whether it supported or opposed this gradient, tended to decrease or increase the conductivity of the solution.

When the heat transfer conditions for a cell were made poor by running it outside of the cooling bath and the conduction section was separated by glass wool from the electrode compartments, a magnetic field caused no measurable change in conductivity. It may be concluded that conductivity effects in magnetic field reported by previous investigators probably resulted from the disturbances of concentration and temperature gradients and changes in heat transfer characteristics of the electrolytic cells. If these effects are prohibited, at the current densities and field strengths considered in this investigation, a magnetic field offers no effect on the current-carrying characteristics of an electrolytic conductor which may be measured as a change in conductivity.

92 pages. \$1.15. MicA 55-270

QUANTUM MECHANICS OF THE H_3 COMPLEX

(Publication No. 10,805)

John George Trulio, Ph.D.
Columbia University, 1954

The calculation of the minimum energy of a system of three hydrogen atoms is attempted, with the nuclei placed symmetrically on a line. Prior to this work, the most extensive published treatment of linear symmetric H_3 , by strictly theoretical methods, was made by Hirschfelder, Eyring and Rosen (J. Chem. Phys. 4, 121 (1936)). These authors used, as a trial variational wavefunction, the most general linear combination of three-electron states which can be formed from three 1S hydrogenlike orbitals centered on the nuclei. Eyring and Barker extended this calculation by varying the nuclei off the orbital centers, following the work of Gurnee and Magee on H_2 .

The treatment of H_3 in this paper is based on the variation method. The Gurnee-Magee variation is made, but the basic model employs five 1S hydrogenlike orbitals with centers on the molecular axis. The distance between orbital centers is the same for all pairs of adjacent orbitals. The trial wavefunction for the system is constructed as follows:

1) Five orthonormal one-electron orbitals are formed from the basic 1S hydrogenlike orbitals. Three orthonormal orbitals are (g)-type and two (u)-type under reflection through the plane of symmetry normal to the molecular axis.

2) From the complete set of 120 three-electron Slater functions arising from the orthonormal orbitals, those twenty-six functions of (u)-type with $S_z = 1/2 \hbar$ are selected.

3) The twenty-six Slater functions are linearly combined, giving twenty-six eigenfunctions of S^2 . Those twenty states with $S^2 = 3/4 \hbar^2$ are retained.

4) The trial wavefunction is an arbitrary linear combination of the twenty acceptable three-electron states. The non-linear parameters in this function are:

ρ' = internuclear distance

$2R'$ = distance between adjacent orbital centers

z = screening constant (same for all basic orbitals)

The matrix element of the Hamiltonian (H) between two Slater functions is written as a linear combination of integrals involving the orthonormal one-electron orbitals. These in turn are expressed as linear combinations of basic integrals between the 1S hydrogenlike orbitals. The basic overlap, kinetic energy, and electron-nuclear attraction integrals are standard. However, difficult three- and four-center electron repulsion integrals arise. These were evaluated by numerical integration on the CPC at Watson Scientific Computing Laboratory. The integration is based on the analytically known potential of a charge-cloud of density $\exp(-r_a - r_b)$. The basic integrals are recombined to give the matrix element of (H) between the various Slater functions. From these elements, the matrix elements of (H) between acceptable three-electron states are formed.

For each chosen set (z, ρ', R'), one 20×20 matrix arises; whose ground eigenvalue is determined by a matrix iteration method. A net of twenty-seven sets is used. The overall minimum energy $(E_{3H} - E_{H_3})_{\text{MIN}}$ is 72.4 Kcal/mole, an improvement of 4.3 Kcal/mole over the Barker-Eyring value. (Experiment: ~ 102 Kcal/mole)

The method is apparently not practical for general use in quantitative calculations. For H_3 , as an alternative to the mathematically intractable model using 1S orbitals with different screening constants, the use of additional 1S orbitals with the same screening constant, but with centers off the molecular axis, is suggested.

72 pages. \$1.00. MicA 55-271

ECONOMICS

ECONOMICS, GENERAL

THE GULF COAST REFINERY MARKET FROM 1925 TO 1950: A STUDY IN MARKET BEHAVIOR

(Publication No. 10,790)

Daniel Corning Hamilton, Ph.D.
Columbia University, 1954

The purpose of this paper is to appraise the structure and performance of the Gulf Coast refinery market. The central question is whether any feasible alterations in existing conditions would be likely, in the light of recent discussions of effective competition, to improve the results.

The Gulf Coast refinery market embraces the Texas and Louisiana Gulf Coasts and the Atlantic seaboard states. The number of sellers in this market is not large. Its structure is one of moderate but persistent oligopoly. Economies of scale make entry difficult despite reasonably free access to crude, pipelines, distribution channels, and technology. On the other hand, the price reporting mechanism is informal and incomplete. Distribution channels are fluid. Product and process innovation has been persistent. And the market has exhibited a strong secular growth in demand.

In brief, the structure of the market is inconclusive. Is the number of sellers sufficiently small, is concentration sufficiently great, and is entry sufficiently difficult, to create a strong presumption, other things equal; that existing firms have foregone aggressive independence in favor of the security and profit to be derived from a policy of live-and-let-live? And to what extent must the answer be qualified because other things are not equal - because the market has exhibited a rapid growth, a restless technology, and a lack of formal organization which have reduced both the incentive and opportunity for concert of action?

These questions cannot be resolved without supplementing our information on market structure with a survey of market performance. When this is done, the following findings emerge. With respect to price behavior: (1) average weighted monthly product realizations are neither insensitive nor rigidly geared to crude costs; (2) individual product prices are sensitive to short term (seasonal) shifts in demand; (3) the refiners' margin varies far more widely over the cycle than output or inventories; and (4) there is no discernible persistent and purposive price discrimination. With respect to other observable dimensions of performance: (5) capacity is concentrated in plants within the optimum size range; (6) there is no chronic excess capacity; (7) product and process innovation has been persistent and

pervasive; and (8) profits have been stable at inauspicious levels. The latter, plus the efficiency of scale and lack of excess capacity, suggests a reasonably good relation of price to long run marginal costs. Consistent with this is the suggestion of independent action implicit in the growth of individual firms. There has been much variation in these growth rates, a fact more readily reconciled with independent than collusive activities.

In the light of these findings, it may be asked whether any of the tentative hypotheses concerning the relation of structure to performance (which have recently been advanced by such writers as Clark, Mason, Bain, Adelman, Wilcox, Stigler and Edwards) suggest alterations in the Gulf market structure which might reasonably be expected substantially to improve its performance. In the author's view, the answer is a tentative "no". The Gulf Coast refinery market is certainly not the epitome of pure competition, and our evidence concerning both its structure and performance is far from complete. On the other hand, the available evidence does seem to suggest a persistent downward pressure on processing costs and margins, and the market structure which has produced this behavior does seem to fall toward the "workable" end of these writers' scales. This being so, an informed if tentative judgment in behalf of effective competition would seem to be permissible.

414 pages. \$5.18. Mic 55-14

ECONOMICS, COMMERCE - BUSINESS

A FOLLOW-UP OF HUNTER COLLEGE SECRETARIAL GRADUATES AS A BASIS FOR CURRICULUM IMPROVEMENT

(Publication No. 10,668)

Margaret O'Shea Kane, Ed.D.
New York University, 1954

The purpose of this follow-up study was to evaluate the secretarial training program of Hunter College through the work experiences of its graduates. This analysis of the effectiveness of the curriculum was needed because the course of study had never before been evaluated in the 20 years of its growth from a small teacher-training department to a secretarial training program with 13 staff members.

There were 923 students from the classes of 1945-1952 who studied secretarial training, of whom 491 replied to the first letter that they were still actively engaged in non-teaching work. Twenty-nine

of these girls were personally interviewed and they agreed to keep on their desks for one week a special "time sheet" on which they recorded all their activities. From these sheets was compiled a list of 90 duties which was circulated as part of a questionnaire to the remainder of the 491 graduates. There were 349 usable replies from graduates who had entered highly diverse fields.

In rating their instruction at school, the graduates judged as the most helpful secretarial courses, shorthand and typewriting. The least helpful required secretarial course was economic geography, the special value of which course for secretaries has yet to be established. In their secretarial training they revealed that they lacked some specialized secretarial work, a course in business English, and an adequate foreign language stenography program.

The figures revealed that these former students do not use many office machines; in fact, only the mimeograph is used often by 10 percent of the graduates. Between one-fourth and one-third use electric typewriters. Since industry is steadily adopting them as standard office equipment, and since Hunter College has only one electric typewriter in the secretarial practice class, the school's training on these machines is certainly inadequate.

The frequency list of duties shows great variety with the most frequently performed activities including telephoning, taking dictation and transcribing it, filing, attending to the incoming mail, and answering correspondence without dictation.

It was suggested that the advanced class in stenography substitute some of the vocabulary and business practices of a few of the specialized secretarial fields such as legal and medical, instead of the general business material now used, and that provisions be made for helping students retain their typing and shorthand skills until graduation. It was further suggested that students be taught how to answer correspondence without dictation in the stenography course and that somewhere in the budget allotments for electric typewriters be found.

The lack of a special English course for secretaries was noted and its urgent need was supported by the opinions of the graduates. It was recommended that a one-term course should be set up. It was also recommended that the foreign language stenography course now given only in the evening session for one term be extended to a year's work and that the possibility of its being offered in the day session be investigated.

Much more assistance is needed in the general area of guidance. Because of the limited facilities of the Bureau of Education and Vocational Guidance, individual departments must help students discover vocational opportunities within a major field.

Most of the graduates seemed pleased with the fruits of their college education and happy in their jobs. The detailed analysis of their work activities and their evaluation of the training at school should contribute much toward making more meaningful the program for future workers from Hunter College.

220 pages. \$2.75. MicA 55-272

IMPORT PRICE CONTROL IN THE UNITED STATES, 1940-1953

(Publication No. 10,807)

Leonard W. Weiss, Ph.D.
Columbia University, 1954

This paper is concerned with import policy for a general emergency price control program. It includes an account of American policies (both direct import price control by OPA and OPS and government trading and subsidy by such agencies as RFC) and less complete accounts of import price control policies abroad and of international agreements to control world markets.

It concludes that there is a presumption for looser controls on most imports than on comparable domestic goods.

A fairly simple method for calculating numerical values for importing countries' power over world prices is developed. It depends on the formulas for constant elasticity demand and supply functions and assumes knowledge of elasticities and quantities in World Trade. It shows that the United States and Britain are large enough to control significantly the foreign prices of a large part of their imports. However, long run supply considerations, possible foreign resentment, probable monopolistic reactions to monopsonistic buying, and the inflationary effect of import restriction all suggest very cautious use of this power.

There has been a serious need for coordination of American import policies in control periods. A single agency should control general import price policy with power of review over import provisions of tailored regulations and direct responsibility for most emergency import subsidies and tariff suspensions.

An initial freeze regulation should be replaced, as soon as possible, by a markup regulation as the general import price regulation. The import markup regulation was inordinately complex under OPS and almost unenforceable in both periods. The price agency should use a simple formula if imports may enter freely and specified percentage markups if imports are restricted (e.g., quotas or shipping allocations). The latter have been used successfully in Europe and Canada.

In America, but not abroad, tailored fixed ceilings have controlled most major imports. An apparent autarchical tendency in direct controls and the special problems of imports suggest that a tailored ceiling should apply to imports only when they have been expressly considered in its preparation; ideally only after review by a central import branch. There were few import losses due to fixed ceilings in OPA because of government trading and subsidies, and in OPS because foreign purchase price was usually uncontrolled. Generally ceilings should apply to domestic resale only unless a monopsonistic position is to be exploited.

Subsidies are particularly appropriate to imports and should be a part of any general program. There

is a clear need for closer coordination of price control and subsidy decisions and probably for centralized consideration of all import subsidies. Single agencies governing import ceilings and subsidies were common abroad.

Temporary tariff suspension is an excellent import price control policy, but it should be open, carefully planned and centrally controlled as in wartime Canada and as opposed to the covert, unplanned American program.

Government trading improves import price control by permitting stricter control, more flexible policies, and long term guarantees in return for favorable prices. Britain had important advantages not available to the United States in the last respect.

International agreement to control world markets can be successful even with a large number of countries participating. Such participation is probably essential except in all out war. Agreement on allocations is generally more flexible than agreement on price. Such cooperation should be used wherever possible.

471 pages. \$5.89. MicA 55-273

or sold for public purposes, but no systematic program had adequately accounted for the total existing and future public land needs in the county. However, the State statutes would have seriously hindered any such program, for the statutes do not permit a municipality to manage its tax land holdings in accordance with a long-range and flexible planning program. The tax laws in particular "encourage" the immediate sale of tax-foreclosed land.

The county made no major changes in the lay-out of the premature subdivisions before selling the lots. Again, any comprehensive program to redevelop these prematurely subdivided areas would have been obstructed by a lack of clear-cut authority in the States enabling legislation. It is impractical to expect a private developer, desiring to modernize a street pattern, to cope with the complexities of land ownership and the public and private rights vested in mapped streets. A municipality, while in a somewhat more advantageous position, is handicapped by the judicial opinion that the State's redevelopment laws were not intended to be used for the redevelopment of the predominantly vacant land in premature subdivisions.

The combined federal, State, and local controls over the subdivision processes were generally successful in preventing the recurrence of premature subdividing in Monroe County. In the subdivisions created after World War II, in the towns of Brighton and Irondequoit, only ten percent of the lots were vacant in 1952. In Irondequoit, where Cornick had found that sixty-three percent of the total lots in the town were vacant, only thirty-three percent were vacant in 1951. It was evident that, not only had the old premature subdivisions been developed, but the addition of new ones had been prevented.

There was some evidence of minor weaknesses in the controls. Subdividing by "metes and bounds," and "ribbon subdividing" along existing highways are still ineffectively regulated. Better zoning densities and a more comprehensive policy of extending municipal utilities would tend to minimize the detrimental effects of ribbon subdividing. And a new definition of "subdivision" in the State planning statutes would permit more supervision by the local planning boards over such subdividing.

266 pages. \$3.33. MicA 55-274

ECONOMICS, FINANCE

THE STATUS OF PREMATURE SUBDIVISION PROBLEMS IN 1952: A STUDY OF MONROE COUNTY, NEW YORK

(Publication No. 10,747)

Frederick Adams McLaughlin, Jr., Ph.D.
Cornell University, 1955

In 1938 Philip H. Cornick, in a report transmitted to the Governor of New York, described the problems in five metropolitan districts of the State resulting from several decades of prematurely subdividing land. This 1952 study, based primarily on research in Monroe County, N. Y., analyzes the effectiveness of the legislation, regulations, and programs, which were designed to solve these premature subdivision problems and to prevent their recurrence. Essentially the research sought to answer two questions: (1) what had become of the thousands of vacant, tax-arrears lots in these premature subdivisions, and (2) had the legislative and regulatory controls been effectively applied to bring a halt to the creation of more premature subdivisions?

From 1936 to 1952 Monroe County, using the "mortgage" foreclosure procedure, had taken title to 10,336 prematurely subdivided, tax-delinquent lots, at an average cost of about \$75.00 each, although other New York communities, using the in rem foreclosure procedure, reported an average cost of \$8.00. The county had sold 8114 lots to private purchasers. Each purchaser agreed in a sales contract to erect a building on his lot within a specified length of time and in conformity with local building regulations.

Some of the tax-foreclosed land had been saved

THE INFLATION OF 1950-1952

(Publication No. 10,418)

Joseph Francis Zimmerman, D.S.S.
Syracuse University, 1954

The outbreak of the Korean War precipitated a sharp inflation in the United States. The sharpest price increases occurred in the first nine months subsequent to June 1950.

Sector analysis is the approach utilized in this study. The part played by each sector of the economy in the inflationary developments is investigated from

the standpoint of the sources and the uses of funds.

A vast upsurge in personal consumption expenditures was responsible for all of the direct pressure on prices during the third quarter of 1950 since gross private domestic investment and government purchases of goods and services, in terms of constant dollars, were less than during the second quarter of the year.

The sharp increase in expenditures for inventories must be assessed most of the responsibility for the direct pressure on prices during the fourth quarter of 1950. Personal consumption expenditures were slightly above the second quarter level, but can be explained in terms of seasonal factors. Government purchases of goods and services also were slightly above the second quarter level.

Continually increasing federal government purchases of goods and services must share in the responsibility for the direct pressure on prices with increased personal consumption expenditures during the first quarter of 1951.

The direct pressure on prices during the second quarter of 1951 may be traced to a sharp increase in gross private domestic investment, associated with inventory accumulation, and to continually increasing federal government purchases of goods and services.

The federal government was responsible for the direct pressure on prices in the period July 1951 through December 1952 since this period was characterized by greatly increased federal government purchases of goods and services.

Unfortunately, sector analysis has certain limitations which reduce its value as a technique of economic analysis. These include neglect of certain factors such as the attitudes of businessmen, the individual firm and industry, the influence of increased

congressional appropriations, and the impact of defense contracting. Acknowledging its limitations, sector analysis is superior to time series analysis as an approach to the problem of inflation in the period 1950 to 1952.

The effectiveness of the public policy adopted to combat the inflation can be assessed with the aid of sector analysis. The increase in the discount rate and in reserve requirements was vitiated by Federal Reserve support of the government bond market. The "accord" was the first real anti-inflationary monetary measure that was adopted. The essence of the "accord" was that the Federal Reserve System withdrew its support of a fixed pattern of interest rates on government obligations, but guaranteed an orderly market for the obligations. The rate of bank loan expansion slowed down considerably after the "accord." However, it is probable that this development was due to a slackening in the demand for bank funds rather than to the "accord."

The restrictive monetary policy, had it been adopted in June 1950, probably would not have prevented the vast upsurge in purchases during the next nine months since it was in full force during the second quarter of 1951, yet gross private domestic investment peaked during this quarter. A restrictive monetary policy restricts bank funds only to those who had been using them. Funds sufficient to cause an inflation were available from other sources.

The inflation would have been more severe had not the federal government adopted certain anti-inflationary measures and had not production increased. To sum up, monetary measures, non-monetary measures, and a substantial increase in real production must be given credit for limiting the severity of the inflation. 247 pages. \$3.09. MicA 55-275

EDUCATION

EDUCATION, GENERAL

A CRITICAL EXAMINATION OF THE USE OF ANALOGY IN SCIENCE WRITINGS FOR CHILDREN: AN INVESTIGATION OF TRENDS IN CERTAIN ASPECTS OF ANALOGY IN RELATION TO CHANGES IN EDUCATIONAL PROCEDURES

(Publication No. 10,619)

Nelson Frederick Beeler, Ph.D.
New York University, 1954

The use of analogy plays an important part in the general educative process and is frequently resorted to in scientific investigations. The study tested the hypothesis that several aspects of the use of analogy in science writings for children have changed during the years and that these changes parallel changes in educational procedures.

Four chronological periods were established on discernible changes in the procedures suggested for elementary science in the schools. The Periods encompassed the time from 1800 to 1952.

Fifty textbooks and trade books representative of each of the Periods were selected by recourse to a seven item scheme. All the analogies discovered in the books were recorded. Three Aspects of the use of analogy were considered. 1. PURPOSE FOR WHICH THE ANALOGY IS USED. 2. NEARNESS OF THE ANALOGY TO CHILDREN'S EXPERIENCE. and 3. COMPLEXITY OF STRUCTURE OF THE ANALOGY.

Definitions of categories under each of the Aspects were written by the investigator and checked for clarity and usefulness by juries of five experienced teachers.

Descriptions of the educational procedures relative to science education of the four Periods were

synthesized from the writings and pronouncements of science educators. These descriptions were checked and approved by four eminent science educators.

The 6,829,000 words of text which were read produced 8162 analogies, an average of one analogy for each 835 words and forty-one analogies per book.

Of the Major Purposes for which analogy was used, Process Composition, Appearance and Magnitude accounted for 89.7% of the cases. The categories called Process and Composition considered alone accounted for 63.3% of the cases. Minor Purposes were shown to be Physical Property, Emotion, Humor and General.

The collected analogies were categorized with respect to the Aspect NEARNESS TO CHILDREN'S EXPERIENCE under the headings Universal, Common, Infrequent and Impossible. Two special categories called Synthetic and Vicarious were used for those analogies whose special characteristics did not let them fit the other categories.

About two-thirds of the analogies read were judged to have referents which could be experienced by children either universally or commonly. Infrequent analogies made up about twenty percent of the cases and Impossible analogies about five percent. Vicarious and Synthetic analogies accounted for 7.4% of all the analogies collected.

THE COMPLEXITY OF STRUCTURE OF THE ANALOGY Aspect of the use of analogy was produced on the premise that some analogies required the exchange of one old idea for one new one, a category called Single; some required two old ideas for one new one, or the converse, a category called Compound; and some demanded a constellation of old ideas, a category called Involved. A fourth category called Direct included all statements involving the word "like" as a suffix. Single and Direct analogies were shown to make up eighty-three percent of the cases.

No defensible trend in the use of analogy could be discerned. The incidence of analogy, as it was delineated under the three Aspects through the four Periods was erratic. Furthermore, the effect of an excessive use of analogy in one or two particular books of each Period was found sufficient to change the pattern of the employment of analogy markedly. The original hypothesis was, therefore, declared unsupported. However, the problem of the use of analogy seemed sufficiently vital and interesting to warrant further study and several suggestions for further study were made by the investigator.

136 pages. \$1.70. MicA 55-276

GUIDANCE AND COUNSELING IN THE PHILIPPINES AND PROCEDURES FOR VITALIZING ITS FUNCTION IN THE PUBLIC SCHOOLS

(Publication No. 10,657)

George Henry Bennett, Ed.D.
New York University, 1954

Chairman: Professor Roland H. Spaulding

The purpose of the Investigation

The Philippine Department of Education and its Bureau of Public Schools have indicated an increased awareness in recent years that investigation, criticism and improvement are in order if better, more workable, and more uniform standards of guidance and counseling content and programming in the public school system, especially at the elementary and secondary school levels, are to come into existence.

For many years in Philippine public school education, there has been a dearth of school people trained and experienced in the essential areas of guidance and counseling. Also, there has been no generally accepted guide basic to a better understanding of the modern educational concept of guidance and counseling and the techniques and procedures associated with it.

This study, therefore, was undertaken to determine what is being done and what needs to be done towards developing a practical plan for the initiation and expansion of guidance and counseling activities in the Philippine public elementary and secondary schools. Specifically, the attempt was made to determine (a) how the Philippine concept of guidance and counseling came into existence, (b) the nature and scope of present guidance and counseling processes, (c) the efficacy of these processes in terms of stated educational aims and objectives, and (d) the professional and psychological readiness of Filipino educators for participation in the planning and execution of sound programs of guidance and counseling; also, to evaluate such findings and formulate a better plan to bring about nationwide public school programming of guidance and counseling services.

Method of Procedure

The study has been divided into two parts: Part I - The History of Guidance and Counseling in the Philippines - which confines itself to developments since 1912 with respect to the guidance and counseling movement in the Islands, and Part II - A Guidance and Counseling Work Manual - which outlines procedures that can be utilized, especially in the public schools, to establish and expand effective programs of guidance and counseling.

Data for Part I required a careful review of the bulletins and directives dealing with the subject of guidance, and more recently guidance and counseling, which have been released occasionally by the Philippine Bureau of Public Schools, and an intensive perusal of other writings and recorded comments on the subject. Also, as a result of travel in the Islands during all of 1952, the investigator had the opportunity

to learn much about the development of public education in the Philippines since the turn of the century, to observe and study present teaching methods and "guidance" practices, and to discuss educational matters with pupils and students, school officials, teachers and other staff members, as well as with out-of-school youth, parents and other adults.

Data for Part II of the study derived principally from the writings on guidance and related matters by American educators.

Summary of Findings

In the Philippines today, teacher interest is widespread for having guidance and counseling as a planned activity and an integral part of the schools' total program. However, a serious handicap to bringing into reality adequate programs of this activity continues to revolve around a general lack of "know how" and a paucity of educational leadership prepared to capitalize on the evinced enthusiasm.

It should be noted that the Philippine Government and its Department of Education, as an indication of their increased concern, have taken some steps to remedy this situation. However, recommendations have been set forth in this study which underscore certain actions that can be taken almost immediately in the Philippines for the organization and development of adequate guidance and counseling services in the nation's public schools.

208 pages. \$2.60. MicA 55-277

A STUDY OF THE PERSONALITIES AND SOCIAL INTERESTS OF A GROUP OF NEGRO COLLEGE FRESHMEN AS REVEALED IN THEIR COLLEGE COMPOSITIONS

(Publication No. 7129)

Malcolm Adkins Davis, Ed.D.
New York University, 1952

Recently, high school and college courses in English have emphasized writing in which the student deals with his individual experiences, beliefs and problems. Various values have been given to such writings and a number of approaches made to them. These approaches have investigated chiefly writing skills, sentence structure and evidences of self-expression. The purpose of this investigation is to study this type of writing as a means of understanding the student, the student's background, and his character structure as it is seen in relation to that background.

The writer studied ninety-four college students whom he taught in four English composition classes at Prairie View Agricultural and Mechanical College, Prairie View, Texas. Students were asked to write six themes:

My Favorite Relative in My Immediate Family.

My Favorite Type of Party or Entertainment.

My Favorite Sport or Recreation.

What I Expect to Get from a College Education.

What I Expect from Life.

What I Expect to be Doing Ten Years After Graduation.

Students were given a personality test and a problem check list. The personality test was the Washburne Social Adjustment Inventory. The problem check list was the Mooney Problem Check List (College Form). Students were asked to write the themes as part of their regular assignments in English composition courses, over a six-weeks period. During this period, they were given the tests.

The main purpose of this study is to discover how standardized personality tests compare with an analysis of a series of writings based on personal experience in the understanding of a student and whether the themes offer data additional to that found by the tests. The method used was to take certain problems common to all of the students, and to discover the different methods used by each in tackling these problems. It was hoped that this method would give information about the character traits, and some information on his cultural pattern. This study considered the problem of finding security, the problem of gaining social prestige and social approval, and attitudes toward racial and social problems.

Each student's writings were analyzed and a cross analysis of all the writings was made to discover the cultural patterns that the writings revealed. The investigator did not examine the results of the tests until after the analysis of the writings. He scored the Mooney himself, for it does not require a trained interpreter. The Washburnes, which call for interpretation by an expert, were sent to the Bureau of Educational Research, Syracuse University, Syracuse, N. Y. to be scored, profiled and interpreted.

Findings from the Three Instruments

The Mooney revealed that the students had many problems in each of the 11 areas. The largest numbers were in the areas of "Social and Recreational Activities," "Curriculum and Teaching Procedures," "Finances, Living Conditions and Employment" and "Adjustment to College Work." There were 1402 problems in these 4 areas. Many problems did not reflect reality because the students did not check problems even though the test verbalized them.

The HAS section of the Washburne which deals with the fields of "Happiness," "Alienation" and "Sympathy" reflects the relationships of the student to his home life. The percentages for the group as a whole in "Happiness" were: seventy-one per cent normal; seventeen per cent low normal; ten per cent borderline and two per cent maladjusted. In "Alienation," the scores were: one per cent well adjusted; thirty-four per cent normal; thirty per cent low normal; twenty per cent borderline and fourteen per cent maladjusted. In "Sympathy" one per cent was well-adjusted; forty-nine per cent normal; twenty-nine per cent low normal; eighteen per cent borderline and three per cent maladjusted.

The PIC section of the Washburne deals with the fields of "Purpose," "Impulse-Judgment" and "Control." This section shows the relationships of the student and school work, in self-direction, and self-organization. In the area of "Purpose" fifty per cent were normal; twenty per cent were well-adjusted; three per cent superior; twelve per cent low normal and fifteen per cent borderline. In the area of "Impulse-Judgment" the scores were: fifty-three per cent normal; seventeen per cent low normal; fifteen per cent borderline; and fifteen per cent maladjusted. In the area of "Control" the scores were: fifty-two per cent normal; twelve per cent well-adjusted; seventeen per cent low normal and eight per cent maladjusted.

The wishes made by the students in the "Wish Section" of the Washburne reflected American Negro culture. There were thirty-five wishes for an education, thirty-nine for material objects, twenty-one for travel and nineteen for academic values.

The themes gave only a few statements about racial relations. Sixty-nine students made indirect statements about these problems. Forty-three of the students were concerned with migration, fifty-two wanted positions of leadership, fifty wanted to own a home (twenty-four in a "nice" neighborhood). The students indicated indirectly that they are concerned with social status. Education was viewed primarily as a means to social prestige. Thirty-eight young women stated that their reasons for loving a relative were that the relative was loved and respected by the community. Nine stated that they loved a relative because he was an excellent church worker. Thirty-two young women mentioned the absence of "bad Habits" as the reason for their preferences. All young men in the study mentioned the fact that one parent was loved by the community, and there were eleven who mentioned the absence of "bad habits" in a parent. Vagueness about future job opportunities was expressed by forty-three of the students.

The use of students' themes, when these themes have as subjects the personal experiences and aspirations of the students, can give information about social factors, the life and personalities of the students, and the students' emotional reactions to social conditions such as the demands of war, the facts of segregation and other matters.

252 pages. \$3.15. MicA 55-278

**ABILITY TO SELECT SCIENTIFIC HYPOTHESES:
AN ANALYTICAL STUDY OF THE ABILITY OF
A SELECTED GROUP OF COLLEGE FRESHMEN
TO CHOOSE SCIENTIFIC HYPOTHESES**

(Publication No. 10,633)

Zylpha D. Hurlbut, Ph.D.
New York University, 1954

Chairman: Professor J. Darrell Barnard

The purpose of this study was (a) to determine some of the factors which influenced a certain group of college freshmen in selecting scientific hypotheses, and (b) to find the relationship between these factors and other pertinent information regarding these students. To accomplish this task of determining these factors, an Instrument of Investigation was constructed.

Thirty-four problems dealing with life situations of a scientific nature were gathered from several different sources. Solutions were obtained for these problem-situations from reliable authorities. Interest appeal and comprehensibility were determined by submitting them to 32 students enrolled in a college freshman science class. The degree of difficulty and extent to which they would stimulate reflective thinking were judged by three specialists in science education.

Copies of the 15 problem-situations remaining after this screening were presented to 258 students enrolled in college freshmen science classes in four colleges and universities. These students suggested 1141 different hypotheses.

Analysis of these hypotheses revealed five levels of thinking. Therefore, five categories of hypotheses were established and the 1141 hypotheses were allocated to these categories. The selection of the most representative hypothesis of each category for each problem-situation was determined by the agreement of two out of three well qualified jurors. Problem-situations lacking representative hypotheses were discarded.

The remaining three problem-situations together with the most representative hypotheses, arranged in random order, and accompanied by instructions, comprised the Instrument of Investigation.

Copies of this Instrument were presented to fifty-six first semester college freshmen enrolled in Anderson College. These students were instructed to rank the hypotheses in the order of their correctness giving 1 to the best hypothesis for each problem situation and 5 to the poorest. They were asked to write why they chose the hypotheses which they selected.

Twelve of these fifty-six students also related their responses orally and these were recorded by a tape recorder. The validity of the Instrument was based upon a comparison of these oral and written responses.

The written responses of these freshmen were analyzed to determine factors which had influenced their selection of hypotheses. These factors were allocated to categories which were suggested by the

nature of the factors and were arranged in three groups, viz., Simple Factors, Intermediate Factors and Complex Factors. Per cents were found which expressed the relationship between the number of factors comprising each group and the total number of factors used by each student respectively.

The ability of these freshmen to select hypotheses was determined by a comparison of their ranking of hypotheses with the ranking of three jurors, and was expressed in total points of deviation for each student. The reliability of the Instrument was based upon the relationship of points of deviation found in students' first ranking of hypotheses and their second ranking four weeks later.

Pertinent relationships expressed by Pearson r's were determined between these students' use of factors comprising one group and those comprising each of the other groups of factors. These were found by correlating the per cents representative of the different groups of factors. Relationships expressed by Pearson r's were found between these students' use of factors comprising each group and their respective age, linguistic ability, intelligence, reading skill and science achievement. These were calculated, using the per cents representative of the different groups of factors and percentiles representing these students' intelligence, linguistic ability, reading skill and science background. Chronological age was expressed in months. Also relationships denoted by Pearson r's were determined between these students' ability to select hypotheses and their respective age, linguistic ability, intelligence, reading skill and science achievement. These students' ability to select hypotheses was represented by their respective points of deviation in hypotheses ranking.

Calculation of Fisher t's revealed that of the 28 relationships found only seven were significant. Of these, two were negative, viz., relationship between students' use of Simple Factors and Complex Factors and relationship between use of concrete imagery and Complex Factors. Those found to be positive were: relationship between students' use of Simple Factors and Intermediate Factors; relationship between age and use of Intermediate Factors; relationships between ability to select hypotheses and linguistic ability, reading skill, and science achievement respectively. 226 pages. \$2.83. MicA 55-279

COOPERATING WITH NATURE: A REFERENCE BOOK OF THE CONSERVATION OF NATURAL RESOURCES PREPARED FOR THE JUNIOR HIGH SCHOOL LEVEL

(Publication No. 10,669)

Robert William Kasling, Ed.D.
New York University, 1954

Chairman: Professor J. Darrell Barnard

Statement of Problem

The problem was the preparation of a reference book covering the general field of the conservation of

natural resources for use by junior high school students.

Procedures

Four subsidiaries were constructed to investigate the problem. The first was the determination of inadequacies of conservation material in science and social studies books written for junior high school students. This was done to provide the basis for strengthening the content of this study. The second subsidiary involved the selection of sources of conservation material. The third was an analysis of the sources and selection of appropriate materials. The final subsidiary was the organization of the material into book form.

Books containing conservation material were obtained by writing to a list of 148 publishers for copies of all books they had published that included a significant treatment of conservation written so as to be useful to junior high school students. The list of publishers was composed of a list of publishers of science textbooks and a directory of publishers of social studies textbooks for elementary and secondary schools compiled in two separate studies. Other publishers noted in the monthly publications of Social Education for the years 1940 to 1952 were included in the list.

The inadequacies of conservation material in forty-seven science and social studies books were determined by applying the following nine criteria to each book: word-appropriateness for junior high school students, declaration or implication of science principles and social studies principles, coverage of all the major divisions of natural resources, inclusion of student activities suggestions, selected reading references, descriptive list of visual aids, illustrations, and the employment of sound principles of learning. Values ranging from 0 to 3 were assigned to each criterion as it applied to each book. Summaries of values were determined for all of the books and separate summaries for books falling in the categories of a general science and biology, general conservation, geography and social studies, and special aspects of conservation.

Sources of conservation materials were selected upon the bases of authenticity, reputation of the source, geographic scope, and usability of the material. The sources were examined for their contribution to this study, namely: history of the earth, minerals, flora, fauna, and land forms; soil origin and development; natural resource statistics; conservation practices; motion picture films; picture illustrations; principles of science; principles of social studies; student activities suggestions; and conservation reading lists.

Analysis of the sources and the selection of appropriate materials were the third subsidiary of the procedure. Analysis of the sources was made in general upon the bases of the completeness of treatment and the most recent and reliable information on the subject. Selection of appropriate materials from the sources was made by outlining historical factors of earth, minerals, flora, fauna, soils, and land forms as presented in the source materials. Details were

selected from the sources on the basis of their essential nature in supplying the minimum explanation of chronological events consistent with a logical development of such history. A list of motion picture films was compiled on the basis of the author's personal review of all films produced by all Federal agencies concerned with conservation. Sets of criteria were established and applied in selection of student-activities suggestions, picture illustrations, and the principles of science and social studies.

The organization of the material into book form was structured upon the fundamental findings of the investigation, which were analyses and evaluation of the application of the nine criteria established to guide the study.

415 pages. \$5.19. Mic 55-54

**HEREDITY IN NON-TECHNICAL MAGAZINES
AS A BASIS FOR GENETICS IN
GENERAL EDUCATION OF TEACHERS**

(Publication No. 10,121)

Leroy Elbert Mecay, Ed.D.
University of Missouri, 1954

Supervisor: Dr. Ralph K. Watkins

Purpose: This study was conducted to determine the extent to which a knowledge of genetics is needed by the layman in order to read with comprehension, understanding and appreciation the articles on the subject which appear in the non-technical periodicals having the greatest circulation.

Method of Research: The documentary frequency type of the normative survey was the method of research used in this study. The complete issues of twelve non-technical magazines published for the period 1949-1953 were the sources of data.

The two criteria used for selecting the documents were classification of "general interest" by Ayer's Directory of Newspapers and Periodicals and high circulation. A survey instrument consisting of certain genetic characteristics was prepared, validated by a jury of recognized geneticists, and used for gathering the data from 602 genetic articles from a total of 1520 different issues of non-technical magazines.

Summary:

1. The agricultural publications are the most important sources of genetic information. The general weekly magazines, the general monthly magazines, the health and the women's magazines are listed in descending order of importance as sources of information.

2. The significance of the 602 articles obtained from the 1520 issues lies in the fact that a highly specialized subject, such as genetics, appeals to and is being made available to the general reader.
3. The rural public and those interested in agriculture have a greater interest in and felt need for a knowledge of the principles, concepts, and terminology than others.
4. Two out of every four articles presenting a genetic topic will pertain to animal genetics, while one article out of every four will pertain to either human or plant genetics.
5. The best sources of material on human genetics are the health and women's publications; the most abundant source of material relating to animals and plants are the agricultural publications.
6. Articles pertaining to genetics will probably present two or more minor topics. If the major area is animal heredity, we can expect six out of ten articles on "evolution and ancestry", while if the topic is plant heredity, we can expect approximately equal treatment of "positive breeding" and of "hybrid vigor". "Human abnormalities", together with one or more other topics, have the greatest appeal to the general reader in the area of human genetics.
7. The vocabulary burden of words and phrases needed to read the 602 articles is considered to be relatively small.
8. There is a tendency on the part of writers of popular genetic articles to coin descriptive phraseology, which is both ambiguous and redundant.
9. Authors of popular genetic articles do not discriminate sharply between essential and non-essential terminology.
10. Authors of popular genetic articles assume that the general reader possesses the knowledge needed for an understanding of the terminology used. If this is a valid conclusion, then we may assume that instruction of the non-specialist in the area of genetics needs to be of a superior quality.
11. A knowledge of at least 22 of the basic principles of genetics is needed if the general reader is to comprehend the context of all the genetic articles collected in this study.
12. In every article, a knowledge of the principles and hypotheses of genetics was assumed by the writer of the article.

13. Since the list of words, phrases, and genetic principles is composed of concepts needed to solve satisfactorily problems encountered in the everyday life, these materials are essential in a program of science for general education.
14. Great confidence can be placed in the scientific accuracy and reliability of the articles relating to genetics and heredity published by the magazines used.
15. If the articles selected from the periodicals are representative of the trend in magazine content, it is evident that teachers will require a comprehensive, fundamental knowledge of genetics.

Recommendations:

1. The list of genetic words, phrases, and principles should prove of value to:
 - a. Classroom teachers and supervisors at all grade levels, including college.
 - b. Subject-matter specialists engaged in the training of teachers.
 - c. Curriculum workers who are in agreement with the basic philosophy underlying this investigation.
 - d. Authors of textbooks of genetics and biology.
 - e. The professional writer who wishes to popularize scientific contributions.
2. The list of genetic words, phrases and principles is suggested as the minimum around which the learning experiences in heredity can be organized. The rank of each word, phrase, and principle serve as the criterion of the degree of emphasis which should be given to the development of understandings of the science in a program of general education.

225 pages. \$2.81. MicA 55-280

AN EVALUATION OF THE AUDIO-VISUAL PROGRAM IN THE PUBLIC SCHOOLS OF NEWARK, NEW JERSEY

(Publication No. 10,680)

Edward Twining Schofield, Ed.D.
New York University, 1954

Chairman: Associate Professor Irene F. Cypher

The Problem

The purpose in this investigation was the study and evaluation of the audio-visual program in the

public schools of Newark, New Jersey. Consideration of the problem centered around four major points: (1) emergence and growth of the audio-visual program; (2) selection and validation of criteria for measurement; (3) evaluation of the audio-visual program; and (4) recommendations for improving the audio-visual program of the city. While the problem dealt specifically with one city and its audio-visual program, the recommendations posed as a result of the study, together with historical data, standards and evaluation records, suggest a design for organization and administration of a program of audio-visual education in school systems comparable in size to that of Newark.

Procedures in Collecting and Treating Data

The investigation was based on two methods of educational research: the historical and the normative-survey. The investigator consulted the minutes of the Newark Board of Education, annual reports of various departments responsible for audio-visual education at different periods in its development, letters, bulletins, circulars, catalogs, inventories and other records in the Board of Education's headquarters.

Interviews with school personnel were conducted as a means of obtaining data not available in printed form.

Data related to actual operation of the audio-visual program at the time of the study were secured through visitation and by the employment of a questionnaire sent to all teachers. Every school was examined by the investigator. During the school visits, the administrators, librarians, members of the audio-visual committees and representative teachers were questioned on facilities, materials and difficulties encountered in utilization of audio-visual aids. The questionnaire was organized in five parts: (1) competencies of teachers in use of equipment and materials; (2) extent of utilization of radio and television programs produced by the Board of Education staff members; (3) comparison of the effectiveness of representative audio-visual aids on the basis of teachers' judgments; (4) difficulties in using materials and equipment; and, (5) general comments by teachers.

The evaluation was on the basis of seventy-two criteria chosen from literature in the field and selected by audio-visual educators throughout the country and a group of teachers and administrators in Newark's schools. Each criterion was stated so that on the basis of information presented in the study, the investigator assigned a minus sign if the condition were inadequately satisfied and a plus sign if the condition were present to a satisfactory degree.

Findings and Recommendations

Four significant strengths were noted in the audio-visual program of the city. They were: (1) coordinated program for supplying teaching materials; (2) broad and democratic approach to selection of materials by teachers; (3) comprehensive teacher training facilities; and, (4) strong public relations enterprises.

Specific recommendations were based on weaknesses in the operation of the audio-visual program for the city as uncovered by the evaluation.

1. Improvement of central office facilities was indicated, particularly with reference to re-location of the central agency.

2. A basic minimum of the equipment in the schools was recommended in relation to national standards.

3. Extension of the supply of materials was recommended through building basic collections of materials in individual schools as a major need followed by a plan for diversifying and specializing resources of the central agency.

4. Increase in the strength of central office staff was recommended in terms of potential needs for improving and refining administrative patterns now operating.

5. Organization of materials centers in schools, paralleling the central agency pattern, was urged.

278 pages. \$3.48. MicA 55-281

THE CONSTRUCTION AND EVALUATION OF RESOURCE UNITS OF WORK AS A BASIS FOR THE DEVELOPMENT OF A COURSE OF STUDY IN HEALTH PRINCIPLES FOR THE NURSING CURRICULUM

(Publication No. 10,777)

Anna Pearl Sherrick, Ed.D.
University of Washington, 1954

Supervisor: Edgar M. Draper, Ph.D.

This study was undertaken to develop a course of instruction for use in preparing the student in nursing education to teach patients in hospitals about health principles.

Fifteen health principles were set up and submitted to thirteen health specialists for confirmation and suggestions. Each principle was adjusted to the cardiac patient; it was found that most health principles which applied to the normal adult also applied to the cardiac patient. The jury offered several pertinent improvements. From these approved health principles, five were selected to be set up as resource units to aid instructors in preparing student nurses to teach adults about health. These five were: (1) The Physical Examination, (2) Cleanliness, (3) Mental Health, (4) The Optimum Daily Diet, and (5) Desirable Weight.

Evaluations of the five resource units were planned as approved by Dr. Edgar M. Draper, Professor of Curriculum Education, and Dr. August Dvorak, Director of the Bureau of Admissions, both of the College of Education of the University of Washington. These plans were studied by the Executive Faculty of the Montana State College School of Nursing when they met in September, 1953. The campus division of the faculty made plans to evaluate three of the units related to Community Hygiene: The

Physical Examination, Cleanliness, and Mental Health. Two of the General Hospital Divisions cooperatively planned to use the Optimum Daily Diet and the Desirable Weight units for entering students that fall.

There were two faculty members on the campus teaching Community Hygiene. The instructor in the Experimental Group used and made available to the students the resource units along with the course outline, while the instructor of the Control Group did not use or make available these units. Both groups were given the same achievement test as a pretest, and a final test in order to obtain scores for evaluating the three resource units. No significant gains were shown by the group using the resource units.

The Directors of Nursing of the Butte Community Memorial Hospital at Butte, Montana, and the Montana Deaconess Hospital at Great Falls, Montana, discussed with their faculty members the plans for using the Optimum Daily Diet and the Desirable Weight resource units. The teaching in the hospitals offered an opportunity to assist students with the instruction they may give patients about health. The number of students was limited because of the small number entering the hospital at that time. The Experimental Group of ten students entering the hospital in September was equated with the group of students who had been at the hospital for six months. In September an achievement test was given to the control group to determine the degree of understanding they had gained of material in other course outlines similar to that included in the resource units. At this time and again at the end of six months the same test was given to the experimental group. Data from the final tests were compared to determine how much understanding the two groups had of these resource units. Again there were no significant differences between the gains made by the two groups.

The number of students involved was too few to make the results statistically valuable. The fact that the faculty attempted to use different methods to assist the students in preparing to teach adults about health shows that more can be done. This study has offered the opportunity to prepare and put into use resource units from the five selected health principles. Carrying out the research project has been rewarding and indicates that continued experimentation by this school of nursing is desirable. The project may well be the stepping-stone to more such research by this and other nursing school faculties.

349 pages. \$4.36. MicA 55-282

AN INVESTIGATION OF SELECTED
POST-HIGH SCHOOL ACTIVITIES OF THE
1947 AND 1948 SYRACUSE UNIVERSITY
CITIZENSHIP CONFERENCE DELEGATES

(Publication No. 10,419)

William Stewart Tosh, Ed.D.
Syracuse University, 1954

Purpose

Today the survival of democratic nations is more than ever dependent upon the quality of citizenship exercised not only by an enlightened electorate, but also by competent leaders. Syracuse University has been interested in the area of responsible citizenship for a number of years. This study is one of several anticipated when the Syracuse University Citizenship Education Conference Program was inaugurated in 1946. It is an investigation of selected post-high school activities and opinions of former outstanding high school citizens of New York State who were chosen by their peers to attend the 1947 and 1948 Citizenship Conferences.

Methodology

A twelve-page questionnaire was developed to obtain data in the areas of home background; education; occupations; community, political, and civic activities; leadership status; and worthwhile citizenship experiences.

The present status of the population has been presented and comparisons have been made among the various groups within the present population and with the subjects of other studies.

Findings and Conclusions

Although the subjects came from homes representative of all economic levels, where few parents held college degrees, they have attended higher educational institutions at a higher rate than the average high school graduate in America today. They have participated heavily in college campus activities and have assumed their share in college leadership roles.

The undergraduate majors selected most frequently by the men were the sciences, social sciences, engineering, and education; while the women concentrated primarily in the latter.

Almost everyone earned a portion of his college expenses, and over 50 percent received scholarships.

The Citizenship college graduate population compares favorably in many respects with the populations of the Terman, Syracuse, and Minnesota studies despite a younger median age and the fact that one-half of the men are still unemployed as they are either in the armed services or attending college.

The college graduates enter the upper occupational groups, while the non-college graduates enter the middle classifications in greatest numbers. The subjects are economically well-situated since their median salary is well above that for the United States.

The college graduate group possesses a higher median salary than the non-college graduate group.

A majority of the subjects have emigrated from the community in which they attended high school. They have tended to marry less frequently than the average American of comparable age.

The respondents have been active in community affairs, but not to the extent that they would like. They have shown no outstanding accomplishments in political or civic activities with the exception of voting in the 1952 national election.

In general, the subjects were confronted with new situations which made many claim that assuming a position of leadership in a community and in college was more difficult than in high school. Although only one-third of the subjects reported obtaining positions of leadership in the community, over one-half obtained leadership positions on the college campus. There are indications that the potential of leadership is present and that it will be only a matter of time before a greater degree of leadership activities will be assumed.

Most of the subjects expressed the belief that they had experienced worthwhile citizenship experiences in high school, in college, and in the community. Participation in student government and social studies classes were deemed as the most worthwhile high school activities; while social science classes and fraternity and sorority life were given the highest rating for college experiences. Participating in youth and church organizations were suggested as the most worthwhile community citizenship experiences.

In general, securing a higher education, serving in the armed forces, establishing a home, getting acquainted in the community, and becoming adjusted to one's work have taken the time of most of these individuals since high school graduation. The evidence points to the fact that today, for many of our young people, at least a decade following high school will be needed before the young adult can afford to give serious attention to community, civic, and political activities. 310 pages. \$3.88. MicA 55-283

AN INTENSIVE EVALUATION OF THE SERVICES
OF A HIGH SCHOOL GUIDANCE PROGRAM

(Publication No. 10,136)

J T Winslow, Ed.D.
University of Missouri, 1954

Supervisor: Paul C. Polmantier

PURPOSE:

The general purpose of this study was to evaluate a high school guidance program by employing two basic techniques. More specifically the purpose of this study was to answer the following questions: (1) What relationships exist among the evaluations of a guidance program obtained by interviewing four groups of participants; namely: pupils, parents,

teachers, and administrative officials? (2) What relationships exist between the evaluations obtained by interviewing the four groups of participants and the evaluation obtained by three judges employing an external criteria technique? (3) Will one of the techniques employed in this study serve as a satisfactory method of evaluating a guidance program in a high school? (4) Can a satisfactory method of evaluating a guidance program in a high school be developed by employing the two techniques employed in this study?

METHODS OF PROCEDURE:

Three categories of methodologies were employed in this study. They were: the external criteria method, the client opinion method, and the expert opinion method.

Section G, Evaluative Criteria formed the basis for the first evaluative technique. The consensus judgment of three judges employing this instrument was accepted as the most valid evaluation of the guidance program obtained by use of the external criteria method.

Clients, whose opinions regarding the guidance program were solicited, were 146 pupils enrolled in the participating high school. The experts were: (1) forty-two parents of pupils enrolled in the participating high school, (2) eleven teachers on the faculty of the high school, and (3) seven administrative officials of the school.

The opinions of these four groups of participants were obtained by personal interviews conducted by the investigator. Four different interview schedules were constructed using questions of the open-end type. Insofar as was possible, the interview schedules were constructed along parallel lines in order that comparisons of the points of view expressed by the various groups of participants could be made.

SUMMARY:

It seemed apparent that the pupils were much better informed regarding the guidance program than were their parents. Both parents and pupils expressed what appeared to be considerable satisfaction with the benefits received from the guidance program. It appeared obvious that the pupils felt they had received more benefits from the counselor's work than the teachers indicated they had received. Administrative officials reported only a few benefits, and all of these were indicated by the superintendent and principal. Parents reported more benefits from the guidance program than did teachers and administrative officials.

In those areas where direct comparisons of their expressed opinions regarding the guidance program could be made, the pupils and judges appeared to be in rather close agreement. There appeared to be a number of areas important to the evaluation of the guidance program which were not included in the evaluative instrument employed by the judges. Judges and parents agreed that the emphasis of the guidance program was on vocational guidance. Judges and teachers rated some aspects of the guidance program about the same way. There were a

number of areas, however, where there appeared to be considerable variance between their ratings.

CONCLUSIONS:

In the light of the findings of this study, the following conclusions seemed warranted: (1) The evaluative techniques employed in this study yielded varying interpretations regarding the effectiveness of the guidance program. (2) Neither of the evaluative techniques used alone yielded as complete an evaluation of the guidance program as it did in combination with the other. (3) Pupils tend to rate the guidance program higher than do parents, judges, teachers, and administrative officials. (4) Parents and school board members seemed not to be adequately informed as to the nature and purpose of the guidance program, thus making the use of an evaluative technique calling for their opinions lack precision. (5) Until further research evidence is obtained, it would appear that a combination of techniques is more feasible in the evaluation of a high school guidance program than the utilization of one technique exclusively.

204 pages. \$2.55. MicA 55-284

EDUCATION, ADMINISTRATION

FUNCTIONAL STATUS OF THE NEW YORK STATE ELEMENTARY-SCHOOL PRINCIPAL

(Publication No. 10,654)

Harold C. Ahlquist, Ed.D.
New York University, 1954

Chairman: Professor F. C. Borgeson

A review of related literature indicated no general study of the New York State elementary-school principalship since 1943, and no study of the function of the principal at all. The Twenty-Seventh Yearbook of the Department of Elementary-School Principals in 1948 recommended that further studies of the principalship be made in order to raise the standards of the profession.

Data were collected in April and May of 1953 by means of an inquiry form on function sent to one-sixth of the principals, teaching principals, and junior principals of the state, including New York City. Another inquiry form dealing with types of assistance teachers receive from principals to provide the best school experience for children, and types of assistance desired but not received, was sent to 177 teachers over the state. Sixty-eight per cent of the principals and 47 per cent of the teachers responded.

Data from principals were organized in tabular form showing per cents of principals engaging in each function, according to type of principal, kind of school district, size of school, income level of community, and whether or not the principal has a

secretary. The inquiry form provided space for write-ins of additional functions. These were listed in order of frequency of mention.

Types of assistance reported by teachers were listed in order of frequency of mention.

Tables were analyzed by comparing per cents of principals engaging in particular functions. Patterns of types of functions performed by various types of principals in the different kinds of districts and communities under varying conditions were thus identified.

The main part of the study is organized under the following six headings: Program of Instruction, Service to Individual Pupils, Administration, Public Relations, Relationships, and Teachers' Evaluation of Services from the Principal's Office.

The study reveals the accretion of such a vast variety of functions to the job of the principalship that the important function of supervision is seriously overshadowed. It is recommended that an assistant principal or supervisor of instruction be provided in schools with more than twenty classrooms, and that adequate assistance be provided the principals of other schools to enable them to do an adequate job of supervision.

Of the five major areas into which the study has been organized, administration by far outweighs the others in number of functions taking the time and attention of the principal.

Comparison with other studies shows New York State principals to be more active in curriculum committee work on the local level and in classroom visitation than were the national principals in the 1948 study. New York State principals are considerably more active in holding conferences with teachers as follow-up to classroom visitation, and in teaching demonstration classes than were the principals in a study of the Kentucky principalship by Lyman V. Ginger in 1950.

It is suggested that boards of education emphasize in their rules and regulations the various aspects of the job of the principalship and give due emphasis to the aspect of improvement of instruction, and that the State Education Department make more specific recommendations relating to the designation and definition of the job of the principalship.

Teachers listed many valuable services they receive from the principal's office, but also listed some unmet needs. Many teachers were lavish in their praise for the fine work their principals are doing.

278 pages. \$3.48. MicA 55-285

**AN EVALUATION OF SELECTION PROCEDURES
USED BY DEPARTMENTS OF VOCATIONAL
AGRICULTURE ON THE SECONDARY LEVEL IN
NEW YORK STATE: BASED ON A STUDY OF
THE QUALIFICATIONS, OPPORTUNITIES, AND
NEEDS OF 525 HIGH SCHOOL PUPILS WHO HAVE
ENTERED UPON TRAINING FOR FARMING**

(Publication No. 10,740)

Robert Frederick Coffin, Ph.D.
Cornell University, 1955

This study deals with the development of "improvement objectives" for the selection of pupils for vocational education in agriculture for use in high school departments of Vocational Agriculture in New York State. The investigation determines the essential qualifications of a prospective pupil and his opportunity for training measured to predict probable success in training for farming. Consideration is given to five criteria: Interest in farming, aptitude for farming, adequacy of training facility, opportunity to assume responsibility and school policy.

Classification of pupils is used to test the significance of 25 factors. A review is made of recommendations advanced by teachers of agriculture, school administrators, school guidance directors, researchers, and leaders in the field. A series of field schedules is used: To study the qualifications, needs, and progress of high school youth in training for farming; to survey the individual farming opportunities appropriate to training of school youth for farming; to study the school policies and procedures relating to the admission of pupils; and to record trends in enrollment. Two standardized instruments are used.

Factors upon which selection can be made with confidence are: Teacher's rating of pupil's interest in farming, pupil's vocational intent, pupil's place of residence, pupil's term of residence on the farm, pupil's development of agricultural enterprises, number of acres in farm, number of acres cropped, number of animal units on farm, status of farm operator in farming, parental encouragement of pupil to be a farmer, parental cooperation in pupil's training program, and pupil's opportunity to assume responsibility in the operation and management of the home or cooperating farm.

The general conclusions are: The prevailing programs of selection give little or no consideration to the all-important aspect of the ultimate establishment of pupils in farming; the number of potential enrollees from farms will not be a limiting factor; the practice of enrolling non-farm pupils who never intend to become farmers is prevalent; the personal relations among teachers of agriculture, principals, and guidance directors are good from the standpoint of initiating and carrying out an effective program of selection; the enrollment of non-vocational pupils will continue to be a problem until school personnel charged with the responsibility of admitting pupils understand and accept the underlying philosophies guiding vocational education in agriculture; a significant number of departments were retaining pupils in

Vocational Agriculture classes who have neither the desire to train for farming nor the opportunity to participate in farming activities; a significant number of policy statements and selection procedures, when revised according to recommendations from school personnel, will be inadequate from the standpoint of recommendations from leaders in the field; and the program of vocational education in agriculture in a significant number cannot be justified on the basis of class composition since all pupils in a particular course did not have a common vocational objective.

It is also concluded that a program of selection should be developed from the standpoint of individuals or special groups of individuals who are meeting the problems of training for farming or related occupations, and that any adequate program of selection is contingent upon its usefulness in a continuous program of vocational education in agriculture.

273 pages. \$3.41. MicA 55-286

ORGANIZED CITIZEN GROUPS WORKING ON CURRICULUM: A STUDY OF LAY PARTICIPATION AT THE LOCAL LEVEL IN PLANNING EDUCATIONAL PROGRAMS IN PUBLIC SCHOOLS IN FIFTEEN SELECTED STATES BETWEEN 1945 AND 1952

(Publication No. 10,665)

Joseph Grimes, Jr., Ed.D.
New York University, 1954

Chairman: Professor F. C. Borgeson

The Problem

The purpose of this study has been to determine the amount of organized lay participation which exists at the local school district level and the nature of such participation in the development and revision of educational programs in elementary and secondary schools in fifteen selected states and the effects it has had upon them.

Procedure

The five-fold scope of the investigation was: (1) to determine the amount of organized lay participation which exists in planning educational programs in the selected states, (2) to determine and describe the stimulus for it, (3) to determine and describe the methods of organization and operation, (4) to define the areas of lay participation and analyze the results, and (5) to draw conclusions from the evidence obtained and to make recommendations concerning participation.

Data were obtained through a review of publications, a study of the files of the National Citizens Commission for the Public Schools, letters of inquiry, a questionnaire and follow-up studies.

A critical examination and evaluation of the information obtained was made through the classification and manipulation of the accumulated data to determine

how it contributed to the problem receiving consideration.

Conclusions were drawn and recommendations made from the data obtained and the subsequent analysis of it. The recommendations made concern the development of sound practices for lay participation in the curriculum area.

Conclusions

1. There is interest in the use of organized citizen committees in the study, development and revision of educational programs.
2. The organized citizens committee movement in the study of curriculum is widespread and has been active in all types and sizes of communities and at all educational levels.
3. Lay advisory committees on curriculum are not new; however, such committees have increased since World War II.
4. There is a consistency and uniformity in the organizational patterns of committees reporting from the various parts of the country.
5. All committees in this study came into being for the expressed purpose of increasing support for and improving education.
6. Such citizens committees are broadly representative.
7. School personnel are generally included in committee membership; however, in no case does such membership exceed twenty per cent.
8. Committee members are appointed in various ways, by the board, by community groups or they join on their own initiative.
9. Committees are generally organized as long range continuing committees with overlapping terms of membership.
10. Committee operation includes regularly scheduled meetings, research to obtain facts and to determine community attitudes, work with school personnel and outside consultants and workshop meetings.
11. Committees are guided by a set of clearly stated written principles.
12. Committee studies are generally concerned with the core subjects at all levels; however, almost all phases of curriculum receive attention.
13. Assignments include development, revision, interpretation and evaluation of curriculum.
14. All school personnel are generally enthusiastic about lay curriculum committees.
15. Such committees have been very successful.
16. Committee activity requires strong leadership, mature members, patience, tact and respect for other individuals and their judgment and training.

Recommendations

1. Committees should cooperate with school personnel and school personnel should cooperate with committees.
2. Committee activity should be cooperative from the start.
3. Procedures should be designed so that conclusions will be reached and decisions made on the basis of pertinent evidence and desirable objectives.
4. Committees should be broadly representative and include critics if they exist.
5. Membership qualifications should be determined in advance of committee organization.
6. The extent of school personnel membership should vary with the nature of the committee assignment.
7. The function of a committee should be clearly stated in writing.
8. Committee leadership should be in the hands of lay members.
9. A committee and its membership should recognize the distinction between the functions of the board and those of the committee.

166 pages. \$2.08. MicA 55-287

A PROPOSAL FOR SCHOOL DISTRICT REORGANIZATION IN THE OYSTER BAY, NASSAU COUNTY, NEW YORK AREA

(Publication No. 10,666)

Howard E. Imhof, Ed.D.
New York University, 1954

The Problem

The purpose of this investigation is to study the five school districts in the Oyster Bay, Nassau County, New York, area that were recommended for organization by the Nassau County School Study Committee and to present a plan for school district reorganization that may serve as a basic consideration for study and action by interested citizens.

The school districts selected for study are facing serious educational problems, the solution of which will require the expenditure of large sums of money. A plan is recommended that presents a practical solution to these problems so that the districts involved may provide the best educational opportunities economically.

Significance of the Problem

In 1946, The Joint Legislative Committee on the State Educational System prepared a Master Plan for School District Reorganization - New York State. It did not include, however, any specific recommendations for the Oyster Bay area. It suggested that the area be left for further study and future determination.

Since that time, the entire County of Nassau has experienced exceptional growth. A Nassau County School Study Committee was formed to study the educational problems of the county. This committee suggested that certain school districts be reorganized in the Oyster Bay area. This investigator has examined the proposal of the committee and he has recommended another plan based on additional evidence.

Procedures

The investigator was guided by the principle that those to be affected by a policy or proposal should have a part in its formulation. The interview technique of the normative-survey method of research was used to gather firsthand information from a cross section of the population and other data that was not available in recorded form. A representative of each of eight categories was interviewed in each of the five school districts. A plan for district reorganization has been developed that is based on the wishes of the people, the educational needs, the characteristics of the communities, and the financial ability to support education.

The bibliographical technique of research was employed in searching the official school district records, reports, governmental records, and population data for information of value to this study.

Findings

The present status of education, the total population, the school population, the estimated future school enrollments, and the kind of education desired by the people were analyzed and the educational needs determined. It was concluded that many of the unmet educational needs were the result of the present type of school district organization.

The five communities were studied in terms of the following: geographical setting, economic characteristics, social characteristics, population characteristics, and zoning characteristics. It was concluded that Oyster Bay, Bayville, and East Norwich had many bonds which tend to unite them.

The financial ability of the districts to support education was analyzed in terms of present and past expenditures, assessed valuations, per-pupil costs, tax rates, indebtedness, and income. It was concluded that the present type of district organization will place an increasing financial burden on the districts in the future.

The necessity for district reorganization is presented. A plan is proposed that recommends the reorganization of the school districts of Oyster Bay, East Norwich, and Bayville into a single district. The technique of comparative analysis was used with the two types of reorganization possible in New York State, and centralization is proposed as the most desirable plan.

A detailed plan for interpretation and implementation of the proposal is described. Special reference is made to the use of a citizens' advisory committee and the principles and media of public relations such a committee might follow.

149 pages. \$1.86. MicA 55-288

THE ROLE OF THE BUSINESS MANAGER IN THE
INDEPENDENT LIBERAL ARTS COLLEGE: A
STUDY OF THE DUTIES, BACKGROUND, AND
EDUCATION-RELATED ACTIVITIES OF THE
CHIEF BUSINESS OFFICER OF THE
INDEPENDENT LIBERAL ARTS COLLEGE
OF MODERATE SIZE

(Publication No. 10,639)

Ernest Frederic Knauth, Ph.D.
New York University, 1954

Chairman: Alonzo F. Myers

The Problem and Its Importance

The role of the business manager in the American liberal arts college has grown in importance and complexity with the development of the country and the expansion of higher education. The question arises whether the enlargement of the business manager's fiscal responsibilities has been matched by a correspondingly greater involvement in the education-related activities in his college - activities dealing with such matters as educational and curricular planning, the employment and advancement of instructors, mapping out organizational and institutional changes, and the like.

This study was therefore designed to investigate the educational background and the occupational or experiential background of the business managers in independent liberal arts colleges of moderate size, to examine the duties performed by them, and to discover whether a connection exists between a business manager's background and the extent to which he may engage in education-related activities in his college.

Methodology

Since informative literature on these aspects of the business manager's service is almost non-existent, application had to be made directly to practicing business managers. A questionnaire was composed and submitted to a group of officers outstanding in the field of college business management. After being perfected to conform to the suggestions and comments resulting from this submission, the questionnaire was sent to the one hundred and twenty-seven institutions qualifying as independent liberal arts colleges of moderate size. Eighty-nine responses were received - a seventy per cent return.

Conclusions and Recommendations

It was found that the education-related activities of the business managers under study are relatively few. Those business managers who do take part in such activities exhibit no recognizable pattern in the duties they perform, the education they received, or the occupation(s) they previously engaged in. It was therefore concluded that no connection can be shown to exist between a business manager's background and the nature or extent of his education-related activities.

However, a number of responding business managers did express a desire for a greater part in the general and educational administration of their colleges, and generally strong interest in a training program as preparation for college business management was also expressed.

These comments and others led the investigator to recommend that the college business manager be primarily an educator, trained or skilled in educational thinking and administration but having responsibility for the business affairs of the college as his particular concern.

396 pages. \$4.95. Mic 55-15

AN EVALUATION OF TEACHING STANDARDS: A SURVEY AND APPRAISAL OF THE SERVICES AND EVIDENCES RECOMMENDED BY LOCAL ADVISORY COMMITTEES AS STANDARDS FOR GRANTING PROMOTIONAL INCREMENTS UNDER THE NEW YORK STATE TEACHERS' SALARY LAW OF 1947

(Publication No. 10,683)

Robert Keeler Stuart, Ed.D.
New York University, 1954

The purpose of this study is to identify and appraise the services and evidences that were recommended by local advisory committees as standards of promotion under the New York State Teachers' Salary Law of 1947.

In general, a service may be defined as an educational objective while an evidence is defined as a practice or behavior which illustrates how a specific service may be met.

Two hundred seventy-two, or 34 per cent of all school districts in the state affected by the 1947 salary law, were represented in this study. Committee reports received from these districts served as the source of the recommended services and evidences.

The services were first classified by grouping them into the following four areas of service suggested in the law: 1) Area A - direct service to pupils, 2) Area B - community service, 3) Area C - nonschool activities and 4) Area D - education. Within each of these broad categories, services were then classified according to a list suggested by Beecher, who at the time of this study was a Research Associate in the State Education Department, and the State Advisory Committee. One hundred nineteen services were identified and distributed among the four areas as follows: 1) Area A - 53, 2) Area B - 27, 3) Area C - 20 and 4) Area D - 19.

Through a process known as telescoping, the original number of services in each area was reduced as follows: 1) Area A - 53 to 10, 2) Area B - 27 to 4, 3) Area C - 20 to 8 and 4) Area D - 19 to 8. This procedure was necessary to eliminate the overlapping of services and the excessive duplication of evidences which would have occurred if the original number of services had been used.

The recommended evidences were classified according to the telescoped service they most nearly defined or illustrated. While no frequency tabulation of these items was made, a total of 1001 evidences was identified with the following area distribution: 1) Area A - 836, 2) Area B - 46, 3) Area C - 71 and 4) Area D - 48.

To judge the acceptability of the recommended services and evidences, seven criteria were proposed. The source of these criteria are the characteristics of sound appraisal instruments. Among the characteristics considered were validity, reliability, objectivity, availability of evidence, comprehensiveness, definition and universality. Each criterion was designed to test one of these characteristics.

As a second step, the criteria were submitted to a jury of twenty specialists for validation and improvement. Nineteen members, or 95 per cent, responded to a request to rate the criteria. Two criteria were modified as a result of suggestions made by the respondents.

Finally, three raters were selected to apply the criteria to the recommended services and evidences. The results of their appraisals are set forth in the following seven conclusions:

1. Seventy-six per cent of all services and 85 per cent of all evidences were rated acceptable.
2. Of the four areas of service, the area of direct service to pupils (Area A) was the most satisfactory.
3. With reference to the acceptability of services, the area of community service (Area B) was the least satisfactory.
4. With reference to the acceptability of evidences, the area of nonschool activities (Area C) was the least satisfactory.
5. The principal reason why services and evidences were judged acceptable was because there was an opportunity for them to be met within the teaching situation in which they were to be applied. (Criterion #4)
6. The principal reason why services were judged unacceptable was because they were not items that all teachers could be expected to achieve, at least in some degree. (Criterion #5)
7. The principal reason why evidences were judged unacceptable was their faulty definition. (Criterion #2)

304 pages. \$3.80. MicA 55-289

EDUCATION, ADULT

THE DEVELOPMENT OF AN OBJECTIVE ANALYSIS OF THE CONFERENCE METHOD OF LEARNING

(Publication No. 10,746)

Harper LeRoy Marlow, Ed.D.
Cornell University, 1955

Chairman: Lynn A. Emerson

The Problem

From the number of conferences that are held daily in industrial, educational and governmental agencies, it may be understood quite readily that this is an important medium of communication. However, the greatest possible potential of achievement by means of this method is not being realized.

In the books, brochures and articles written on the subject of the conference method, many theories have been advanced and achievements claimed - with little or no searching having been done to determine the validity of such claims. One common fault runs throughout the few attempts that have been made to analyze a conference - too much personal judgment has been exercised. The author thought that the first step toward conference improvement would be made if the happenings that take place in a conference could be determined objectively. Therefore, the writer was interested in developing an objective method that would accurately record the actual happenings in a conference with the purpose of using this acquired knowledge to improve the conference procedure.

The Procedure

The study was divided into two parts - (1) the search of printed sources in order to develop the background material, and (2) a field study of seventy-one conferences for making the actual analysis.

The library study involved many sources of which 218 were found to have direct bearing on the study and constitute the bibliography. Included in this material are the reports of conferences held over a period of many years which aided in the writing of the chronological history. As far as the writer has been able to discover, this was the first attempt to trace the chronological development of this method.

The field study was carried out in order to develop a systematic, yet flexible, method that would reduce the subjective element to a minimum and make an objective record of what actually occurred. Recordings to determine such items as intervals of participation, types of responses, response patterns and similar information were registered as the conference was in progress.

To record the data, charts were developed and a timing device created. The device was so constructed that a synchronous motor moved a paper tape at a uniform rate. A reference bar, under which the paper moved, was stationary and was used as the point of recording. The tape movement began simultaneously with the start of the conference and the symbols used in the analysis were recorded on the

moving tape. In this manner a record was made while events were transpiring, and was available for analysis at the conclusion of the conference.

In addition to the material recorded on the timing device, other items such as types of responses, individual participation, etc., were registered as the conference was in session so as to present a complete report of the happenings.

Conclusions

The practical information which was assembled from the analysis was presented in the concluding chapters. These data are concerned with such areas as participation, physical arrangements and planning, as well as personality improvement of the conferee and conference leader. Areas for further study are suggested.

281 pages. \$3.51. MicA 55-290

EDUCATION, GUIDANCE

AN EXPLORATORY STUDY OF THE PROFESSED PARENT-ROLE CONCEPTS AND STANDARDS OF CHILD BEHAVIOR OF MOTHERS IN A PARENT EDUCATION PROJECT

(Publication No. 6290)

Barbara Anne Chandler, Ed.D.
New York University, 1953

Chairman: Associate Professor Milton Schwebel

Introduction

This study had as its primary objective to investigate the relationships between the professed parent-role concepts and standards of child behavior of a group of mothers in a parent education project, and to determine any changes that occurred in their parent-role concepts and standards of child behavior during the time of the project.

Design of the Study

An eight weeks reading-study-discussion course for mothers of elementary school children was planned, organized and conducted by the investigator in accord with the current philosophies and trends in parent education, group work and democratic leadership. The gathering of the data for the investigation was integrated into the ongoing process of the study course.

1. A Personnel Questionnaire obtained basic personnel information about the mothers and also their chief problems in family living and child rearing.
2. The Duvall "Five Things" test secured the mothers' concepts of their parent-role and their standards of child behavior. Their pre-study and post-study responses to this test were classified by the investigator and two

judges according to the traditional-developmental categories formulated by Duvall. Each mother was assigned a pre-study and a post-study "score" for both the **GOOD MOTHER** and the **GOOD CHILD** responses; then the results of the tests were analyzed and statistically tested.

3. Logs were submitted weekly by the mothers. The parent-role concepts and standards of child behavior found therein were also classified according to the Duvall categories.
4. A Study Course Evaluation gave information for investigating the effectiveness of the study course and clues to problems and needs of the mothers.

Subjects of the Study

Data for this investigation was obtained from twenty-eight mothers - predominantly Southern-born, Protestant, fitting the "middle class" classification.

Findings

1. From the analysis of the pre-study and post-study scores, significant differences at the one percent level of confidence were obtained for the **GOOD MOTHER** responses and at the five percent level for the **GOOD CHILD** responses.
2. No relationship was found to exist between the **GOOD MOTHER** and **GOOD CHILD** responses.
3. The nature of the pre-study responses revealed that **GOOD MOTHER** responses were more developmental than **GOOD CHILD** responses. Post-study responses indicated a more developmental trend in both areas with greater movement in **GOOD MOTHER** responses, and with **GOOD CHILD** responses still traditional.
4. A similarity was noted between the findings of this investigation and those for comparable groups in Duvall's study.
5. Logs tended to give a picture of **GOOD MOTHER** concepts that were in accord with those from the "Five Things" test. **GOOD CHILD** concepts in the logs were more developmental than those in both pre-study and post-study tests.
6. The logs revealed kinds of situations in family living and child rearing that seemed important to the mothers.

Conclusions

1. The parent-role concepts held by the mothers are not related to their standards of child behavior; the former are at a more developmental stage and are more amenable to change.
2. During an eight weeks study course, mothers who participate become more developmental both in their parent-role concepts and standards of child behavior.
3. The "Five Things" test and unstructured logs are useful in revealing the parent-role concepts and standards of child behavior of mothers in a study course.

Hypotheses emerging from this study are:

1. Roots of discord in parent-child relationships lie in the differences in the nature of the mothers' parent-role concepts and their standards of child behavior.
2. Parent dissatisfactions arise from the differences that exist (a) between their parent-role concepts and the extent to which it is possible to carry them out, and (b) between their standards of child behavior and the developmental needs of their children.
3. Lack of relationship found to exist between the GOOD MOTHER and GOOD CHILD responses seems to indicate that an understanding of self must precede a change in attitudes toward others.
4. A parent education project similar to the one in this study can produce significant changes in parent-role concepts and standards of child behavior in the developmental direction.

Other implications and suggestions for further study apply to the following:

1. The study of role concepts and standards of behavior in various groups - family, education, industry, to gain insight into behavior and to explore the area of inter-personal relationships.
 2. Parent education in investigations concerning evaluation, participants, aims, use of the group, and leadership.
 3. Teacher education in developing understanding of, and skills in the study of role concepts.
 4. Child development in exploring effects on children of parent-role concepts and standards of behavior.
- 173 pages. \$2.16. MicA 55-291

EDUCATION, HISTORY

A HISTORY OF THE DEVELOPMENT OF THE COURSE OF STUDY OF GEOGRAPHY IN THE NEW YORK CITY HIGH SCHOOLS (1898-1953)

(Publication No. 10,656)

Christian F. Becker, Ed.D.
New York University, 1954

The purpose of this study is to trace the development of geography courses of study in the curricula of the New York City High Schools from 1898 to the year 1953.

In order to make this research project workable the area was localized to that of New York City Public High Schools where an uninterrupted fifty-five year history could be isolated for detailed study. This period covers the time of the existence of the present City of New York and the New York City Board of

Education. The Annual Reports and other publications of this agency permit a scientific chronology of geographic progress. Furthermore, the practices and trends found in New York City are likely both to influence and reflect the pattern of New York State and of the nation, particularly, the large cities.

Traditionally, geography has been the study of areas, large and small. The committing of isolated empirical items to memory has gradually been replaced by a corresponding increase in the number of principles and generalizations to be intelligently studied. The current geography stresses the basic concepts of a functional-ethnographic-environmental relationship (economics) as fundamental to geography teaching at all levels of instruction. This has brought a deepening realization that geography is really a study of cause and effect, an explanation of things, a basis of understanding and of interpreting the earth in terms of usefulness to man.

World War II and atomic energy have brought the peoples of the world sharply face to face with the grim fate awaiting neighbors who fail to understand each other. The new geography tries to create a national psychology designed to broaden the good neighbor policy and to implement it on a global scale.

Documentation for this study is based on the Annual Reports of the Superintendent of Schools (1898-1953) as a cornerstone. Publications of the High School Division of the Board of Education were searched for information - High Points (1918-1953) was especially useful. The pertinent publications of the University of the State of New York, the United States Office of Education, the Journal of Geography the National Educational Association, and many expert authorities are given credit for the material of this study.

During the period of this study geography has undergone many changes in content and methodology in response to world events and economic progress. This study is predicated on the need for a compendium on all aspects of the development of secondary school geography instruction as a basis for the complete understanding of present practices.

In the twentieth century many significant changes have taken place in all fields of education. High school geography passed through physical geography, commercial geography, economic geography, and world geography stages of development. The state and later the city syllabus replaced the textbook as a guide to content and methodology in geographic education. Aims and objectives in teaching geography have experienced the greatest changes during and after important social or economic upheavals.

Democratization of syllabus preparation, of methodology, and of supervision has increased greatly since 1898. Improved materials of instruction reflect both the work of educators and of the inventions and improvements of modern industry. The development of the selection of geography teachers by the New York City Board of Examiners is examined along with the development of the in-service training program of the supervisory staff. The uncertainties of the present world make forecasts of future developments in the teaching of geography unwise.

This historical development of the teaching of secondary geography provides an understanding and a knowledge of current geography programs for all those interested. It serves also as a basis upon which progress for future development can be started. 151 pages. \$1.89. MicA 55-292

THE ORIGIN AND DEVELOPMENT OF THE NEW JERSEY STATE TEACHERS COLLEGE AT MONTCLAIR, 1908-1951

(Publication No. 10,626)

Earl C. Davis, Ph.D.
New York University, 1954

Chairman: Professor William W. Brickman

One of America's outstanding contributions to the world has been its education of the total population at public expense. To provide such education requires trained teachers. New Jersey was the seventh state to establish a state normal school, 1855. The first state normal school in New Jersey was a successful educational experiment that encouraged further endeavors upon a municipal as well as state level. The second New Jersey State Normal School was established at Montclair where, for twenty years, the institution operated as an elementary teacher training school. However, it was as a college for the preparation of secondary school teachers that Montclair made its present reputation.

This study begins with a review of the history of teacher education in the United States during the period just preceding the establishment of Montclair, 1890-1908. It is by no means an exhaustive history, but rather, an attempt to determine the educational climate at that time. The pattern chosen for this thesis was a composite chronological treatment divided into the major periods of growth.

In the selection and preparation of data, the most helpful documents have been the Annual Reports of the principals and presidents to the commissioner of education. Every report for the years 1909 through 1952 has been consulted, as well as the complete file of the student newspapers from the first publication in 1928. Minutes of the meetings of Administrative Council, Faculty, Student Government, and Alumni Associations, the Faculty Dames, and called meetings of the entire faculty, and its committees, have been consulted. From 1940, departmental reports became a part of the annual reports of the president, and have been cited extensively in this thesis. All of the catalogues, including the one issued in 1909, have been studied and significant material has been included. The microfilm and clipping files of the Montclair Times, 1900-1910, were read. There was an extensive file of office correspondence, statistical reports, personnel data, and miscellaneous information, accessible. The college librarians were most generous with their resources, while members

of the faculty, alumni, and friends contributed to the anecdotal materials.

It is evident from this study that Montclair has been a different kind of teachers' college. The emphasis in curriculum has consistently been placed upon the academic preparation of the teacher rather than the methodology of teaching. This writer concludes that Montclair's outstanding contribution to the preparation of teachers has been the successful combination of liberal arts background, with subject matter specialization, in addition to carefully selected professors who made liberal use of professional laboratory experiences.

The democratic administration inspired the faculty to achieve leadership in their chosen fields, outstanding among them being: the foreign student exchange, mental hygiene clinic, field studies, citizenship education workshop, the United Nations and China Institutes, the new tools for learning bureau, speech, composition, and reading clinics, the student personnel services, and now educational television.

The intellectual atmosphere created by the college resulted in a nationally recognized academic achievement by the students and the publication of over 350 books, pamphlets, and articles written by the faculty. Formal recognition of the accomplishments of the administration, faculty, and student body has been accorded to Montclair in its accreditation by leading educational associations and institutions.

From recent critical articles published in newspapers and magazines, concerning the preparation of teachers, an impression is conveyed that public schools are staffed by mediocre people, poorly trained for their work. It is, therefore, important that this study of Montclair be available as an example of one state teachers' college where mediocrity is not perpetuated.

235 pages. \$2.94. MicA 55-293

**THE PARENT-CONTROLLED CHRISTIAN SCHOOL
A STUDY OF THE HISTORICAL BACKGROUND,
THE THEOLOGICAL BASIS AND THE
THEORETICAL IMPLICATIONS OF
PARENT-CONTROLLED EDUCATION IN THE
SCHOOLS ASSOCIATED WITH THE
CHRISTIAN REFORMED CHURCH IN AMERICA**

(Publication No. 10,628)

Jerome Bernard De Jong, Ph.D.
New York University, 1954

1. Problem

The purpose in this investigation was to study and evaluate the theory of parent-controlled education in the Christian Schools associated with the Christian Reformed Church in America.

2. Method

The historical background of the theory of parent-controlled education in the United States was studied

in order to ascertain the development of the theory. The historical background of the churches was traced, the history of the Christian Schools in the Netherlands, and the history of education in the United States, in order to determine the place the parent-controlled school occupies in educational and denominational history. The history of the movement itself was studied in terms of the development of the various periods from parochial, Dutch school to free, English, Christian School Society school. These studies were verified by Christian Reformed historians.

The theological background and basis of the theory was considered in terms of Reformed, covenantal theology. The various Loci of Systematic Theology, particularly Theology, Anthropology, Soteriology, and Ecclesiology, were studied to determine the basic covenantal pattern and parent-child relationships upon which the school is founded. This was validated by Christian Reformed theologians.

The theory of parent-controlled schools was studied in terms of Objectives, Administration, Organization, Supervision, Curriculum, Methods, Teacher and Teacher Training, Discipline, Buildings and Grounds, Finance, and the Church and the School. Questionnaires were answered by various educational leaders who also served as jury to verify the chapter.

The theory and theology were compared to note how the one comes out of the other.

The parent-controlled school was compared to the Roman Catholic Parochial School, the Seventh-Day Adventist Parochial School, the Lutheran Parochial School - Missouri Synod, and the schools of the National Association of Christian Schools to note the similarities and dissimilarities between the systems.

3. Results

There is no doubt but that the parent-controlled theory of education is directly implied in the Reformed, covenantal theology. At many points all the Christian schools were found to be similar, but the parent-controlled theory of organization and responsibility is unique. It is original with the Reformed, covenantal theological system.

4. Conclusions

The theory and theology of Reformed, covenantal theology are consistent. The thesis is very definitely validated. The theory is an earnest and serious effort to implement theological presuppositions.

Four criticisms were brought against the parent-controlled theory of education. (1) It is in danger of parochialism and needs complete freedom from Synodical control; (2) There is danger of exclusivism. Parents and children are to be eternally mindful of covenantal responsibilities as well as covenantal privileges; (3) Theological divisiveness sometimes characterizes this system. Greater cooperation in the Reformed family particularly is needed. (4) There is need of greater parental influence, cooperation, and concern in the school.

166 pages. \$2.08. Mic 55-16

THE HISTORY OF JOHNSON C. SMITH UNIVERSITY, 1867 TO THE PRESENT: TO PRESENT AND ANALYZE THE GROWTH AND THE DEVELOPMENT OF THE ADMINISTRATIVE AND THE CURRICULAR AIMS AND PRACTICES OF JOHNSON C. SMITH UNIVERSITY

1867 TO THE PRESENT

(Publication No. 10,661)

Arthur Allen George, Ed.D.
New York University, 1954

Johnson C. Smith University is a four-year college and three-year theological seminary located in Charlotte, North Carolina, the geographical center of the largest concentration of Negro Presbyterians in the world. It was founded in 1867 by white missionaries without the support or the approval of the local townspeople. It has existed throughout the three main periods in the history of higher education among Negroes.

Although the genesis of higher education among Negroes was in the church-related school, no doctoral study of this type of contribution was discovered, and this research offers the history of one such school which was unique in some respects.

The data used to present the history of the administrative and curricular aims and practices at Johnson C. Smith University came exclusively from primary sources. These were:

1. The reports of Johnson C. Smith University (formerly Biddle) to sponsoring agencies, such as the Church Boards, philanthropic foundations, state and regional accrediting associations, and the press.
2. The routine publications of the University, such as annual catalogues, alumni newsletters, student newspapers.

The data used to interpret the history of the administrative and curricular aims and practices at Johnson C. Smith University were drawn from standard works in higher education and Negro history.

The administrative and curricular aims are presented in two sections, the stated and the implied aims. These are shown in six chronological periods which marked important changes at Johnson C. Smith University. These periods are:

- 1867-1891. The period of the founding.
- 1892-1912. The first Negro administration.
- 1913-1923. Development of higher curriculum standards.
- 1924-1932. The period of philanthropy.
- 1933-1947. Co-education and academic recognition.
- 1947-to the present. Toward integration.

The practices within the school with regard to entrance, matriculation, courses and curricula, requirements for graduation, and procedures for placement of students, are presented in the same form. The present program of the school is compared

to the standards of the Southern Association of Colleges and Secondary Schools, and to the standards of the New England Association of Colleges and Secondary Schools. It is shown that Johnson C. Smith University meets these criteria, in the main, and explanations for lapses are suggested, where they exist.

Finally, a discussion is offered on the position of Johnson C. Smith University as a leader among Negro colleges and with references to standard practices and philosophy of American colleges in general.

The following conclusions are derived from the study:

1. The academic standards at Biddle set the criteria for Negro colleges in the area by 1891.
2. The pattern of Negro faculty and administrative personnel in Negro colleges was set by Biddle in 1886 and 1891.
3. The pattern of administrative control over extra-curricular activities, particularly inter-collegiate athletics, was set for Negro colleges by Johnson C. Smith University by 1892.
4. A healthy resistance to the over-popularity of vocational training as a panacea to solve the problems of Negro education in the United States was fostered by Johnson C. Smith University.
5. The philanthropic attention directed at the school was prompted by recognition, respect, and approval of the program as originally conceived and developed.
6. The establishment of the first professional department of education at Johnson C. Smith University set the pattern for Negro colleges in the entire south.
7. The northern and southern branches of the Presbyterian church have been brought closer together by the existence of the Johnson C. Smith University.
8. The school is well equipped for integration as directed in the Supreme Court decision.

There are four appendices containing the following material: Letters of the founders and early officials of Johnson C. Smith University; editorial comments; correspondence with former students and teachers at the school and with officials of other schools in the area; materials related to the evaluation of the school.

352 pages. \$4.40. Mic 55-17

THE HISTORY OF HAMPTON INSTITUTE 1868-1949

(Publication No. 10,646)

William Hannibal Robinson, Ph.D.
New York University, 1954

Chairman: Alonzo F. Myers

I. Problem

The purpose of this study is to present a faithful record of the significant events which attended the origin and development of Hampton Institute, in order to show how one institution for the higher learning of Negroes in the South has sought to meet the needs of a racial minority group, almost from the very moment of liberation from slavery up to 1949.

II. Sources

The majority of the primary sources used in this study were the reports of the principals and presidents of the school and other institutional records, letters, catalogs, and the minutes of the Board of Trustees. Secondary sources consisted chiefly of accounts of the development of higher education for Negroes in particular and in American higher education in general.

III. Procedure

The historical method of research was utilized. First, a brief recapitulation was made of the educational opportunities made available to slaves. Second, a chronological narrative of Hampton Institute's history was recounted. Third, certain aspects of school's growth and development were presented in a topical arrangement. The study was concluded with a survey of the school's growth in influence and with general recommendations.

IV. Findings

A. Chronological Narrative

Hampton Institute was an outcome of the Civil War and the Reconstruction.

Slaves congregated behind the Union lines in the vicinity of Hampton, Virginia, prompting the American Missionary Association to start schools there and this occurrence, together with the work of the Freedmen's Bureau in this area after the War, set the stage for the coming of Samuel Chapman Armstrong and the founding of Hampton Institute in 1868.

The first period of the school's history, 1868-1893, was that of Armstrong's administration who, through parentage and boyhood experiences, through education and young manhood experiences, through war and reconstruction experiences, seems to have been led by destiny to become the founder of Hampton Institute and the architect of its early development. Manual labor training was combined with academic study.

The second period, 1893-1917, was marked by extensive physical and financial expansion under the administration of Hampton's second principal,

Hollis Burke Frissell. Instructional emphasis was shifted from the academic to the industrial, and the training of tradesmen and industrial arts teachers became the chief aim of the educational program.

The third period, 1918-1933, saw the progressive elimination of subjects of the elementary and secondary school subjects, and the attainment of collegiate status.

The fourth period, 1938-1948, was one during which sharp declines in financial resources and internal conflicts threatened the school's future.

B. Topical Arrangement

The average annual student enrollment for the first twenty years was 350; for the next three twenty-year periods it was 690, 880, and 1066, respectively.

The first curriculum at Hampton was academic and at the elementary grammar school level. Industrial arts and trade education, agricultural and teacher education received emphasis throughout most of the school's history. As the college emerged, it assumed the pattern of traditional American colleges.

Starting with very limited funds, by 1948 Hampton's physical properties were valued at more than \$2,000,000, and its endowment was well over \$11,000,000.

Hampton's successful experiments with non-reservation education for the native Indian and its plan of education for the underprivileged made the school nationally and internationally famous.

V. Recommendations

That Hampton continue to pursue the goal of non-racial and inter-racial education.

That the future educational program at Hampton be based on students' needs as determined by careful investigations.

That Hampton pursue a decidedly progressive educational program and resist the present tendency among Negro colleges to follow the academic pattern set by the traditional leaders in American higher education.

467 pages. \$5.84. MicA 55-294

EDUCATION, PHYSICAL

AN ELECTROCARDIOGRAPHIC STUDY OF COLLEGE ATHLETES

(Publication No. 10,632)

T. Fred Holloway, Ph.D.
New York University, 1954

Chairman: Professor Leonard A. Larson

The Problem

This study attempts to answer four questions:

1. What individual differences are there in each

of the waves or wave segments of the electrocardiograms of these men?

2. How do the waves and wave segments of the electrocardiograms of these men compare with the medically established norms?
3. Can these individuals be grouped by characteristics of their electrocardiograms?
4. Can it be demonstrated that these possible patterns or types are associated with such things as chronological age, type of sport, combination of sports and years of athletic experience?

Procedure

One hundred and two athletes, between 17 and 27, participating in various of five sports at State University Teachers College, Cortland, New York, were electrocardiographed by means of an amplifier tube Sanborn Cardiette. Ratings of performance were carried out by the coach of each of five sports and lists made of the athletes in rank order of performance in the sport. Sports experience data were collected by means of a questionnaire. The times of the athletes in the 100, 220, 440, 880 and one mile runs were obtained from college track and field activity course records.

Findings

There were wide individual differences in most of the sixty-five electrocardiographic items of the 102 college athletes and the athletes differed in some of these items when compared with the subjects of normal studies and with medically established norms.

Using the tetrachoric method of correlation one hundred and twenty-nine slight to strong tendencies were found for better performance, as rated by coaches in five sports, to be associated with various electrocardiographic measures. Two hundred and ninety-six slight to strong tendencies were found for the athletes who participated in one sport or sports combination to have various different electrocardiographic item values than the athletes who participated in other combinations or other of the five sports. Six hundred and thirty-seven slight to strong tendencies were found for the athletes with experience in one sport or sports combination to have different electrocardiographic item values than the athletes without experience in the sport or sports combination. Two hundred and twenty-three slight to strong tendencies were found for the age, height, weight, heart rate, blood pressure, number of acquired varsity sports letters, and time in the 100, 220, 440, 880 and one mile runs of the 102 college athletes to be associated with certain characteristics of their electrocardiograms.

Conclusions

The findings of this study seem to warrant the following conclusions:

1. There are wide individual differences in most of the sixty-five electrocardiographic items of the 102 college athletes of this study and the athletes differ in some of these items when compared with the subjects of normal studies and with medically established norms.

2. These athletes may be grouped by characteristics of their electrocardiograms according to the degree of tendency found for better performance in five sports, as rated by each coach, to be associated with certain characteristics of various of sixty-five measures of their electrocardiograms.

3. These athletes may be grouped by characteristics of their electrocardiograms to the degree of tendency found for the particular sport group or combination of sports group in which they participated.

4. The athletes of this study may be grouped by characteristics of their electrocardiograms to the degree of tendency found for the particular sport group or combination of sports group in which they had experience.

5. Certain characteristics of a number of the electrocardiographic items of these athletes are substantially associated with their age, height, weight, heart rate, blood pressure, number of acquired varsity sports letters, and time in the 440 yard and one mile runs.

421 pages. \$5.26. MicA 55-295

AN EVALUATION OF SELECTED PHYSICAL EDUCATION ACTIVITIES TO DETERMINE THEIR WORTH IN BETTERING INTERGROUP RELATIONS:

A SOCIO METRIC ANALYSIS OF NEGRO-WHITE RELATIONSHIPS IN PHYSICAL EDUCATION CLASSES IN A CONNECTICUT HIGH SCHOOL

(Publication No. 10,672)

Harriet J. Kupferer, Ed.D.
New York University, 1954

The purpose of this study is to evaluate four selected activities in the physical education curriculum to measure their effect on intergroup relations as reflected in the degree of acceptance between groups.

In order to carry out the research, the problem was analyzed and four sub-problems became evident. These are: What constitutes the criteria for the selection of a school which will present appropriate situations for testing the values of physical education in intercultural relations; What are the criteria needed to determine the physical education activities which may achieve optimum results in the development of positive intergroup relations; What is the status of the intercultural behavior prior to the introduction of the physical education activities and what changes have occurred following participation in these activities; What are the implications for the physical education program with respect to its social contribution.

The school was selected as to its physical education program by using validated standards for secondary physical education curricula. Its location is determined by validating criteria which might indicate a potential intergroup tension area. Validation was achieved by use of a jury and through literature.

The activities were chosen by criteria which

represented those which might be used to evaluate the worth of physical education activities as they relate to fostering good human relations. The criteria were validated by jury and through the literature. Physical education activities were rated by a group of women physical education instructors by the established criteria. On the basis of their ratings, field hockey, soccer, softball and swimming were selected for evaluation.

In order to measure the effect of these activities on the group relations a sociometric question was asked of the classes at the beginning of an eight-week unit in each of the four activities, and every two weeks thereafter, until the completion of an eight-week unit. Sociograms were constructed and analyzed to note changes in group structure and acceptance.

The findings of the research impel the writer to draw the conclusion that the groups in the four activities did not appear substantially to alter their social structure as related to increased racial acceptance. The evaluation of team games as they were taught in this school seems to indicate that their constructive value is negligible. All the data point to the maintenance of separate racial groups which do not significantly alter that structure. The evaluation of the individual type of activity yields a conclusion similar to that drawn for team games.

On the basis of the study the following recommendations and implications were drawn:

1. Classes should be no larger than thirty-five or forty. This should make possible acquaintance with each student by name.

2. More attention should be paid to the social and emotional needs of the students as well as to their physical needs. Timely evaluation of the program should be made.

3. A list of objectives for good human relations should appear in the curriculum and constructive attempts to reach these should be made.

4. Situations which elicit responses of a social nature should be created.

This study may help to bring into focus a realization that physical education has the potential for group integration but it remains for the leaders to aid each individual to achieve a place for himself among his peers based upon his abilities and his contributions; that the ultimate aim of all education is to so equip the student that he may take his place in a community of men and women and so strengthen it because of his presence there.

128 pages. \$1.60. MicA 55-296

**THE DEVELOPMENT OF A SPORTS MANUAL
FOR THE UNITED STATES AIR FORCE**

(Publication No. 10,676)

Jerome R. Needy, Ed.D.
New York University, 1954

The Problem

While serving as Assistant Chief of Sports, Headquarters United States Air Force, Washington, D.C. the writer was confronted with the need for a Sports Manual for the United States Air Force. It is the purpose of this study to develop a Sports Manual which will serve as a guide to United States Air Force personnel charged with the responsibility of organizing and conducting a program of sports for an Air Force installation.

Procedure

Pertinent data were gathered by means of a pilot study and a detailed survey of the sports program of over fifty Air Force bases. These data were supplemented by a documentary survey of professional literature. The techniques and instruments used by the researcher were the check-list, observation, individual interview, conference, questionnaire and job analysis.

Organization and Treatment of Data

Information regarding current practices in program, program promotion, publicity, facilities, equipment, safety, training, records, office management, relationships with civilian agencies, program objectives, job functions, evaluation, finance, maintenance, instruction and personnel was gathered and presented in the form of representative summary statements.

A survey was made of the available literature in the field. From these sources a tentative list of factors and information pertaining to each was compiled. A pilot study was made of selected Air Force bases. Members of the sports staff were asked to list and discuss the factors which they felt required consideration when planning and administering the base sports program.

The findings in the preceding two steps were consolidated. A list of factors was submitted to fifty Air Force bases as part of a questionnaire. Sports personnel of the above bases were requested to evaluate each factor and to suggest additional factors which might have been omitted.

Twenty-six factors were identified by the researcher as basic to sports program planning and administration and are discussed in detail in the Sports Manual.

Twenty-six statements are presented by the writer as acceptable principles to be used by Air Force base sports personnel as guides in program development and administration. Each principle is presented showing documentary evidence taken from the literature. The line of reasoning followed by the writer in stating the principle and accepting it is indicated by the references and discussion following each principle.

An analysis of program content, the duties and

functions of the sports department and staff, the professional literature and the recommendations of sports directors pointed out certain subject areas which required coverage in the Sports Manual. From this procedure the writer developed the format for the Manual.

A draft of the Manual based on the above was prepared by the author. It was then submitted to a committee of consultants selected in collaboration with the American Association for Health, Physical Education, and Recreation. These consultants reviewed the draft and made detailed suggestions with regard to revision. The writer evaluated the report of the consultants and incorporated those criticisms and suggestions deemed pertinent into a revision of the draft of the Manual.

The draft of the Manual was then submitted to further review by a committee of Air Force base sports directors. Their suggested revisions were also considered by the author and included if deemed pertinent.

Results

The Sports Manual itself constitutes the results of this study. Chapters are devoted to the Air Force Sports Program; Instructional Program; Self-directed Program; Intramural Program; Extramural Program; Varsity Program; Sports Program for Women; Organizing for Competition and Participation; Administration; Personnel; Sports Council; Facilities; Safety; Program Promotion and Publicity.

489 pages. \$6.11. MicA 55-297

EDUCATION, PSYCHOLOGY

**A STUDY OF THE COMPARATIVE EFFECTS OF
POSITIVE AND NEGATIVE STIMULI IN A
NON-VERBAL LEARNING SITUATION**

(Publication No. 10,622)

James George Bond, Ph.D.
New York University, 1954

The Problem

This investigation was designed to study the comparative effects of positive and negative stimuli in a non-verbal learning situation. The effects were considered in terms of the amount of time and the number of trials used in learning the non-verbal task.

The Population and Procedure

The research population was composed of sixty female third year nursing students between the ages of eighteen and twenty-eight years, who were involved in the psychiatric affiliation portion of the nursing program. They were right-handed and at least of average intelligence as approximated by the Wechsler-Bellevue Vocabulary Subtest. All were pledged to secrecy concerning the details of the experiment.

Using a bolt-head electric maze, with a buzzer as the stimulus, each subject was required to learn two equated pathways, one under positive conditions of stimulation (buzzer - right), and the other under negative conditions of stimulation (buzzer - wrong). The group of sixty was broken into four groups to which they were assigned in a systematic fashion. Counterbalancing and a three week time interval between testings were introduced to counteract the influence of habit interference. Table I shows the sequence of pathway presentation and the condition of stimulation for each person assigned to one of four groups.

TABLE I
THE SEQUENCE OF PATHWAY PRESENTATION
AND THE CONDITION OF STIMULATION
FOR EACH GROUP

Group	Initial	Retest
I	A+	B-
II	B+	A-
III	B-	A+
IV	A-	B+

Each subject was run through both the initial and retesting procedures and the results for the amount of time and the number of trials used were tabulated for each condition of stimulation.

The results were treated using analysis of variance and analysis of covariance in making the comparisons between the performances of the groups under the separate conditions. The interpretations of the data were made in terms of the need-reduction theory of learning.

Conclusions

The results of this study lead to the conclusion that a statistically significant difference exists between the effects of positive and of negative stimuli on the amount of time it takes to attain a minimum specified degree of competence in this non-verbal learning situation. This difference is evident only when a careful analysis of inter-group variances is undertaken. Positive stimulation facilitates learning to a greater degree than does negative stimulation in terms of the time scores. This is attributed to the higher level of anxiety generated under negative stimulation which mitigates against rapid reduction and subsequent reinforcement.

It may be concluded, also, that no statistically significant difference exists between the effects of positive and of negative stimuli on the number of trials it takes to attain a minimum specified degree of competence in this non-verbal learning situation. Positive stimulation does tend to facilitate learning to a greater degree than does negative stimulation in terms of trials. This tendency may be explained by the higher level of anxiety generated under negative

stimulation which mitigates against rapid reduction and subsequent reinforcement.

In summary, these conclusions are in essential agreement with those set forth by previous researchers, but generalizations should be made only within the parameters of this experimental design. These results were garnered from a more refined experimental design than those previously used and deal only with a particular population, learning situation and stimulus. 114 pages. \$1.43. MicA 55-298

A STUDY OF EXPRESSED INTERESTS OF THE MENTALLY RETARDED: A COMPARATIVE STUDY OF THE INTERESTS, CONCERNS, WISHES, DISLIKES, AND HAPPIEST TIMES OF THE MENTALLY RETARDED IN PUBLIC SCHOOL AND INSTITUTION

(Publication No. 10,631)

Louis A. Fliegler, Ph.D.
New York University, 1954

Chairman: Professor Edward L. Kemp

General Statement of the Problem

The major objective of this investigation was to determine the general and specific interests of retarded children as expressed by their concerns, wishes, dislikes, likes, and happiest times. It was also the purpose of this research to compare the interests of the retardate at various age levels of public school and institution.

Significance of the Study

Although curricula are being developed in various sections of the country, few systematic attempts have been made to determine interest patterns of the mentally retarded. Future societal needs are generally the guiding bases for curriculum development with little attention being paid to the retardate's present interests.

Interests are primary incentives in the learning process. Recognition of interests engenders the learning process in developing a continuing drive toward a goal in an experiential milieu which is emotionally satisfying. Also, as the child relates himself to the task because it is in keeping with his interests, learning becomes economical and relatively permanent.

The social adjustment of the mentally retarded is considered more important than academic proficiency. In order to promote social adequacy, a knowledge of interest may serve as a means to instil constructive personality patterns.

Procedure

An altered form of the Springfield Interest Finder developed by Jersild was administered by individual interviews to 1027 youngsters, comprising 855 children from San Francisco and Oakland Public Schools and 172 children from Sonoma State Home.

The responses were classified according to

categories devised by Jersild. The categories have been so designed to relate common elements rather than specific items. In this way, the results represent greater stability of interests.

The major categories were divided by the number of children who responded to the questionnaire to ascertain percentages for each category. Comparison of categories was then subjected to statistical analysis by the use of various combinations to discover differences within a group as well as between groups. Significant differences were calculated for chronological age, sex, mental level, race, socio-economic and social milieu.

Findings

The more significant general findings are:

1. Older more than younger children express:
 - a. a decrease for material interests
 - b. a gradual decrease in recreational interests
 - c. a decline in interest for academic areas of study
 - d. an increase in interest of boys for crafts
 - e. less interest in preference for fine arts
 - f. an increase in interest of girls for domestic arts
 - g. a greater interest for self-improvement
 - h. a greater interest in people other than relatives
 - i. a slightly more realistic approach to vocational aspirations

Younger children express the opposite interest patterns.

2. Sex comparisons show that boys more than girls express:
 - a. a slightly greater interest in material things
 - b. a slightly greater interest in recreational activities
 - c. less preference in academic areas
 - d. a greater interest in crafts
 - e. slightly less interest for fine arts except among institutional children
 - f. less interest in domestic arts
 - g. no consistent pattern of interests for self-improvement
 - h. slightly less interest in people
 - i. interest in semi-professional service, skilled and semi-skilled occupations (while girls are interested in clerical and professional vocations)

Girls express the opposite interest patterns.

Conclusions

Of all the variables compared in this investigation, chronological age has the most significant effect upon interest patterns. Sex differences have the next most important influence upon interests of the retardate. It appears that race and mental level differences have no consistent effect upon interest patterns. Socio-economic level, as evaluated in this study, appears to bear no relationship to interests expressed by the retardate.

Although not measured directly as part of this study, general interest patterns of retarded children

are closely parallel to those of normal children used in Jersild's investigation.

266 pages. \$3.33. MicA 55-299

CLIENT ANTICIPATIONS AND EXPECTANCIES AS RELATED TO INITIAL INTERVIEW PERFORMANCE AND PERCEPTIONS

(Publication No. 10,120)

John F. McGowan, Ed.D.

University of Missouri, 1954

Supervisor: Paul C. Polmantier

Purpose. The purpose of this study is to investigate and identify the anticipations and expectancies that college students have before counseling begins and to relate these factors to initial interview performance, and post-interview perceptions of performance. More specifically the study was designed to answer the following questions: (1) What are the pre-interview anticipations and expectancies of clients before counseling begins? (2) How do clients' pre-interview anticipations and expectancies relate to, and perhaps influence, actual performance? (3) What are the clients' post-interview perceptions of the initial counseling interview? (4) How accurately do clients' post-interview perceptions reflect their actual performance? (5) What is the relationship between client and counselor perceptions of initial interview performance and rapport? (6) Are clients who have significantly different pre-interview anticipations more satisfied with one counselor style than with another?

Source of the Data. The clients used in this study were thirty University of Missouri students who came to the University Counseling Bureau as self-referrals during the months of February, March and April, 1954. The counselors used in the study were five employees of the University of Missouri Counseling Bureau staff. Two of the counselors hold the Ph.D. degree in the field of counseling psychology and the other three counselors were advanced graduate students who are employed half-time by the University. Each counselor was assigned six clients at random, and no provision was made for age, sex, scholastic standing, or the nature of the client's presented problem.

Methodology. The raw data used in this study were obtained by the use of open-end, essay type questionnaires, and, verbatim typescripts of initial counseling interviews. Before the initial interview each client filled out a pre-interview questionnaire consisting of twelve questions designed to elicit information about major counseling variables such as the amount of talk the client intended to do, the client's idea of who would be responsible for the introduction of new items, etc. The initial interview was then recorded and a verbatim typescript made. This typescript of the

verbal content of the interview formed the basis for judgments and ratings about the interview. After the interview was finished both the client and his counselor filled out a post-interview questionnaire expressing their opinions and perceptions of the initial interview. Judges ratings were then made concerning major counseling variables, and the relationships between pre-interview anticipations and post-interview perceptions were investigated. The methods used to present the data were primarily descriptive and the results were presented in tabular and graphic form.

Conclusions. The conclusions reached were: (1) Clients have quite definite pre-interview anticipations concerning counseling and a college counseling service is assigned a definite "role" in students' general perceptions of their college environment. Students perceive a college counseling service as a place to go when in need of help with problems related to the area of educational and vocational planning. They do not intend to discuss personal matters, except as they relate to vocational and educational problems, and do not expect to enter into a "depth" or psychotherapeutic relationship. Clients consider their problems as "serious and important" and intend to make important decisions on the basis of the information they receive and the conclusions they reach during the counseling process. (2) Clients' pre-interview anticipations are closely related to and definitely influence their performance during the counseling interview. However, there seem to be two counseling variables that are exceptions. (a) The amount of talking that clients anticipate they will do (they actually do more talking than they expected to do) and (b) the amount of responsibility they will take for the introduction of new items (they accept more than they had anticipated). (3) The majority of the clients felt that the interview was primarily as they had anticipated it would be with the exception of two variables. They felt that they had talked more than they had expected and they felt that they had accepted more responsibility for the progress of the interview than they had originally anticipated. (4) Clients' post-interview perceptions reflect their actual performance with a great deal of accuracy and it would seem that clients' post-interview perceptions and evaluations of counseling may be a more accurate measure of counseling effectiveness than it is generally considered to be. (5) There is a high degree of correspondence between clients' and counselors' perceptions of the variables operating within the interview and in cases where the counselor was unable to establish a working relationship with the client this seemed due to factors other than an inability on the counselor's part accurately to perceive the client's attitudes and feelings. (6) Clients are as satisfied with counselors using one style of counseling as they are with counselors using another style. The degree of satisfaction seems related to the "expertness" or experience of the counselor which is reflected in his ability to form a close, productive counseling relationship rather than the style of counseling that he uses. It also seemed apparent that counselors tend to develop counseling

techniques and methods that fit in well with their own personality patterns that are comfortable for them to use. The development of specific counseling techniques seems to be more directly related to the personality of the counselor than to the nature of his formal training.

302 pages. \$3.78. MicA 55-300

THE CONSTRUCTION AND VALIDATION OF THE FORCED-CHOICE PERFORMANCE RATING FOR PHARMACEUTICAL SALESMEN AND ANALYSIS OF THE CHARACTERISTICS CONTRIBUTING TO OVERALL COMPETENCE AND EFFICIENCY OF THESE MEN

(Publication No. 10,643)

Jerome H. Nagel, Ph.D.
New York University, 1954

Chairman: Professor Charles E. Skinner

THE PROBLEM

The chief objective of this study was to construct a valid forced-choice performance rating for pharmaceutical salesmen and to analyze the characteristics contributing to overall competence and efficiency of these men.

The evidence used to solve this problem was gathered from a pharmaceutical company with a total sales force of approximately 200 men. The company has a total of 15 Divisional Sales Managers. Thirteen of these managers and 178 salesmen were utilized in this research.

PROCEDURE

Each Division Manager was asked to write an essay describing the most successful and least successful pharmaceutical salesman he has ever known. A complete list of descriptive phrases was derived from these essays. Five men in each division were rated by their Division Managers on the applicability of each of the 310 derived phrases. They were rated on a one through five scale ranging from "applies to an exceedingly high degree or highest degree possible" to "applies to a slight degree or not at all".

Preference values and discrimination values of each phrase were statistically derived so that the tetrads for the forced-choice performance rating could be established. When the forced-choice performance rating was established, the Division Managers rated all men in their respective divisions on this form.

FINDINGS

On the basis of a rank difference correlation in each sales division between scores on the forced-choice performance rating and a "Man to Man" rating, it appeared that the forced-choice performance rating

was valid in all but two divisions on at least the 5% level of confidence. The coefficients of correlation ranged from .53 to .89. There is evidence that the low correlations of .27 and .26 in two divisions are in part a reflection of lack of cooperation on the part of their Division Managers.

On the basis of men advanced to supervisory positions, it also appeared that the forced-choice performance rating is highly valid. Of four men advanced, two ranked first within their divisions, one ranked second and one ranked third on the basis of the forced-choice performance rating score.

The coefficients of correlation between national and divisional dollar bonus rank and forced-choice performance rating were not significant, though they ranged from .45 to -.40. There is evidence that, due to many uncontrollable variables within a sales territory, bonus rank is a poor criterion to use in the validation of the forced-choice performance rank and a poor criterion of an individual's overall competence and efficiency as a salesman.

The reliability of the forced-choice performance rating was demonstrated. On the basis of the split half method, the coefficient of correlation was .87, on a nationwide basis. This same method utilized within each division resulted in the following coefficients of correlation: .91 or higher in seven divisions; .87 in one division; .77 to .79 in three divisions; .69 in one division; and .66 in one division.

An analysis was made of the descriptive phrases which discriminate highly between the more and the less competent and efficient salesmen. The analysis indicated that the most competent and efficient salesman has the following qualities: (1) He is a man with excellent ability to plan and organize his work effectively. (2) He is a man who displays drive, self-reliance and initiative in sales situations. (3) He is highly motivated for pharmaceutical selling and highly interested in the technical aspects of his products.

196 pages. \$2.45. Mic 55-18

A STUDY OF THE SCHOOL ADJUSTMENT OF CHILDREN AS RELATED TO THEIR MOTHERS' ATTITUDE TOWARDS PROTECTIVENESS AND ABILITY TO EXPRESS EMOTIONAL WARMTH

(Publication No. 10,648)

Leonard J. Schwartz, Ph.D.
New York University, 1954

Chairman: Professor Bernard N. Kalinkowitz

The Problem

The purpose of this investigation was to determine whether the attitudes toward the protectiveness of children of mothers of non-adjusted school children differ from such attitudes of mothers of adjusted

school children. It was also the purpose of this study to determine whether the mothers of the two groups were significantly different with respect to their abilities to express emotional warmth.

It was hypothesized that mothers of non-adjusted school children evidence significantly different attitudes toward their children than the mothers of adjusted school children. It was further hypothesized that mothers of non-adjusted children evidence significantly less ability to express emotional warmth than the mothers of adjusted children.

Although there is general agreement in the field of Clinical Psychology as to the importance of the parent-child relationship as it affects the child's ability to adjust socially, there is much controversy as to those factors in this relationship which contribute to children's maladjustments. Maternal control over children and the mother's ability to express emotional warmth are factors which have not been investigated adequately.

The Related Literature

There is a rather unanimous agreement in the literature on the basic role of the family as an influence on the child. Freud, Jung and Sullivan have all emphasized the importance of childhood experiences, especially as they relate to the mother-child relationship. The concept of rejection - overprotection developed by Levy is widely employed in the literature to determine the effects of these aspects of maternal behavior on the child.

There is no complete agreement among clinical studies as to the exact relationship between the mother and her maladjusted offspring. Most frequently, these studies discuss the manner of controlling the child's behavior, placing emphasis on overprotection and rejection as closely associated factors in the development of childhood emotional disorders. Maternal emotional warmth is studied, most often, as a related factor in the mother's attitude towards her child.

Procedure in Collecting Data

Group I consisted of fifteen children, and their respective mothers, who were found by their teachers to be maladjusted in school. Group II consisted of fifteen children, and their respective mothers, selected by the teachers of each child in Group I as not manifesting behavior problems and whose adjustment was confirmed by their permanent school record folders. The children of Groups I and II were matched for age, sex, grade and I.Q.

The University of Southern California Parent Attitude Survey was employed to elicit the mothers' attitudes toward the control of children. The Rorschach and Thematic Apperception Test were administered to the mothers and rated by three judges in order to determine the ability of these parents to express emotional warmth.

The Results of the Study

The Possessive, Dominating and Total scales of the questionnaire were found to differentiate significantly between the two groups of mothers. The direction of these differences indicated that mothers

of non-adjusted children expressed a lesser need to control their children than mothers of adjusted students.

Judges' ratings of the projective techniques indicated that the mothers of adjusted children expressed significantly greater ability to exhibit emotional warmth than the mothers of non-adjusted children.

The significance of the variance for the emotional warmth ratings pointed to the significantly wider variability of maternal ability to express emotional warmth in Group II than in Group I.

The Conclusions

The attitudes of mothers of non-adjusted school children reflect a lesser need to control their children than the attitudes of mothers of adjusted students as measured by Shoben's Scale.

Mothers of non-adjusted children express significantly less emotional warmth than do the mothers of adjusted children as determined by the Rorschach and T.A.T.

The range of ability to express emotional warmth is more constricted in the non-adjusted group's mothers than in the adjusted group's mothers.

161 pages. \$2.01. MicA 55-301

THE PSYCHOLOGICAL ADJUSTMENT OF ALL-DAY SCHOOL (YESHIVA) STUDENTS: A PSYCHOLOGICAL STUDY OF 7TH AND 8TH YEAR ALL-DAY SCHOOL STUDENTS COMPARED WITH 7TH AND 8TH YEAR STUDENTS ATTENDING PUBLIC SCHOOLS

(Publication No. 10,616)

Simon S. Silverman, Ph.D.
Yeshiva University, 1954

Research was carried on to determine the comparability of All-Day and Public School 7th and 8th year students. Samples were equated for age, sex, IQ, grade placement, ethnic origin, and socio-economic status. This study sought to determine if there were any significant differences between both samples in terms of their (1) educational attainments; (2) response to disguised, forced choice questions involving apperception of Jewish concepts and values; (3) response to a test measuring a moral trait - honesty; (4) adjustment as determined by response to an emotional stability inventory; and (5) response to a background-interest inventory covering such facets of living as family life, interests and activities, religious practices and group affiliations. Finally, the study sought to probe the implications of this study for the improvement and growth of the All-Day Schools.

Subjects were selected from among three All-Day Schools and two Public Schools. The All-Day School sample consisted of 213 boy students; the Public School sample of 117.

The instruments used consisted of the Henmon-Nelson Tests of Mental Ability, Pintner Intermediate Test, and the Metropolitan and Stanford Achievement

Batteries. These were supplemented by three instruments devised by the author, viz.: Background-Interest Inventory, Controlled Association and the "What Do You Do and Feel" Question Box (Emotional Stability Test).

The mean IQ for the All-Day sample was 112.70, S.D. 16.49, and for the Public School group, 110.64, S.D. 14.56.

In terms of their achievement, the results indicate that in silent reading and arithmetic, there are statistically significant differences at the .01 level between the samples, the All-Day School showing approximately 3/4 of a year superiority over the Public School sample in these fundamental skills.

No statistically significant difference between both groups appears in their responses to a test measuring their emotional stability. Qualitatively, similarities in response by both groups are more frequently observed than differences. It appears from the analysis of this instrument that the All-Day School sample show the same basic emotional needs as their peers attending Public Schools.

On the Controlled Association Test, statistically significant results were obtained. The greatest divergence between the two samples was observed. The mean score on this test for the All-Day School group was 10.67, S.D. 2.72, and for the Public School group the mean score was 8.22, S.D. 2.95. Results indicate that the absorption and integration of Jewish values and concepts are more readily discernible in the All-Day School sample.

The findings on the Maller Self-Marking Test, used to measure the readiness of the individual to accept opportunities for deception, showed no statistically significant difference between both groups, the mean scores being 42.30, S.D. 4.15, and 43.80, S.D. 6.18 for All-Day School and Public School samples respectively. Apparently, there is no evidence that either group is more eager than the other to accept opportunities for deception.

In general, the findings on the Background-Interest Inventory show basic similarities in both groups in the patterns of family living, in the areas of interests and activities, and in their aspirations and goals. The most striking differences appear in the area of religious practices, in which the All-Day School sample shows a great frequency of observance.

Practical recommendations for application to the All-Day Schools are made by the author. These include a reevaluation of the scope and content of the curriculum; the development of better screening processes for admitting students; and the need for developing a child guidance set-up within the framework of the All-Day Schools.

195 pages. \$2.44. Mic 55-19

THE ROLE OF PARENT-CHILD RELATIONSHIPS
IN THE ACHIEVEMENT OF HIGH SCHOOL
PUPILS: A STUDY OF THE FAMILY
RELATIONSHIPS ASSOCIATED WITH UNDER-
ACHIEVEMENT AND HIGH ACHIEVEMENT
OF HIGH SCHOOL PUPILS

(Publication No. 10,650)

John Ralph Tibbetts, Ph.D.
New York University, 1954

Statement of the Problem

The present study was undertaken to determine the extent to which certain patterns of parent-child relationships are related to the underachievement and high achievement of high school pupils. It was hypothesized that high-achieving boys and their parents would describe family relationships in similar terms more often than would underachievers and parents, and that the former families would express more satisfaction with these relations than the latter.

Background of the Problem

Few researches have related achievement to family relationships, and these indicate little connection between the two. Factors other than family environment, which might influence scholarship, were not controlled. This study attempts to control these factors through careful selection of subjects for the criterion groups.

Procedure

The two comparison groups of boys were drawn from the male enrollment at the Milne School, Albany, New York. Students were ranked on the basis of scholastic efficiency ratings. This rating was computed for each student by comparing his T-score for scholastic aptitude (from California Test of Mental Maturity, total score) with his T-score for scholarship (from grade average of previous year's academic subjects). Students whose T-scores for scholarship exceeded their scholastic aptitude T-scores placed in the highest quartile. The reverse was true of boys in the lowest quartile. Each pair of boys chosen from these extreme quartiles was matched on the basis of grade, age, and scholastic aptitude. The comparison groups thus selected consisted of nineteen boys each.

Individual interviews were held with each boy, his mother, and his father. Though not adhering to a rigid interview schedule, the investigator did secure from each subject a response to each question used in the study. After completion of all interviews, the responses were rated on the degree of satisfaction indicated. The four possible ratings were: very satisfactory; fairly satisfactory; somewhat unsatisfactory; very unsatisfactory. Ratings were made of the descriptions by boys, by mothers, and by fathers, of general family relationships, of the boys' attitudes and behavior, and of the parents' attitudes and behavior.

The validity of the investigator's ratings was checked by comparing them with those made by six judges, using interview transcripts for ten of the

nineteen pairs of families. A high degree of correspondence among the ratings was noted.

Ratings were tabulated by groups, and the mean of the differences in group ratings of each item was tested for significance by use of the "t" test. Any "t" value reaching the five percent level of confidence was considered significant.

Findings and Conclusions

The high-achieving boys and parents were more nearly alike in expressing greater satisfaction with family relations than were the low achievers and parents in their generally-less-satisfactory characterizations of family behavior patterns.

The comparative lack of agreement between parents on the standards of behavior expected of the boys is the most striking characteristic of the underachieving group. The high achievers identify themselves more closely with their families than do the low achievers, and are more likely to be motivated by a desire to please their parents. Concomitantly, the high achievers more often describe their parents as thoughtful, understanding, and interested. Relations between fathers and sons seem to depend on mutual interests and shared activities, while bonds between mothers and sons are based on mutual affection and trust.

Applications

The findings suggest points of inquiry to guide a teacher or counselor seeking to understand the attitudes and behavior of adolescents, as they affect student accomplishment.

226 pages. \$2.83. MicA 55-302

EDUCATION, TEACHER TRAINING

A STUDY OF BUSINESS TEACHER EDUCATION
IN THE WEST VIRGINIA COLLEGES FOR WHITE
STUDENTS WITH PARTICULAR EMPHASIS
ON CONCORD COLLEGE

(Publication No. 10,655)

Cloyd Payne Armbrister, Ed.D.
New York University, 1954

1. The Problem

The problem was to study business education in West Virginia colleges, the University, and white secondary schools for the purpose of making recommendations for improving business education in West Virginia.

Information as to the status of business education in the white secondary schools, how the West Virginia colleges and the University are meeting the need for business teachers, and how business teachers are being educated, comprised the basis for the recommendations for improvements.

2. Method of Solution

A letter and a sample questionnaire were sent to county superintendents asking their cooperation. Questionnaires were sent to all business teachers listed in the West Virginia Educational Directory, expecting that at least one questionnaire would be received from each secondary school.

A cover letter and a proposed program of business teacher certification were sent also along with the questionnaire.

One month later a follow-up card was mailed schools not returning the questionnaire. A second follow-up was made by mailing another copy of the questionnaire to schools not replying.

Questionnaires were received from 131 of the 220 schools.

Fourteen high schools were visited to spot check answers.

Questionnaires furnished information as to the status of business education in the West Virginia white secondary schools.

Additional information was received from the West Virginia State Department of Education and county superintendents of schools.

The investigator visited eleven West Virginia colleges educating business teachers and the University to examine equipment and facilities and to obtain information. College catalogues were examined and studied. The visits and the examinations furnished information as to how the colleges were meeting the business education needs of West Virginia.

3. Conclusions

- (a) The number of West Virginia white secondary schools offering business education in 1952 was greater than in 1935.
- (b) The majority of West Virginia schools have one business teacher. Business teachers should be educated to work in such schools.
- (c) West Virginia business teachers have low salaries and heavy teaching and non-teaching loads.
- (d) West Virginia needs graduate business education.
- (e) West Virginia colleges and the University are not educating enough young people for business teaching.
- (f) Most West Virginia business teachers received their degrees from West Virginia colleges. Therefore, West Virginia colleges and the University have the major responsibility for educating West Virginia business teachers.
- (g) Teachers may graduate from West Virginia colleges and be certified in business education without having had shorthand, a course found in most West Virginia schools. Therefore, they are not fully prepared to teach the subjects offered in West Virginia white secondary schools.
- (h) There is need for broadening of high school business education and college business teacher education.
- (i) West Virginia needs a state supervisor of business education.
- (j) Secondary school business graduates need to be guided into college.

4. Recommendations

- (a) West Virginia should employ a state supervisor of business education.
- (b) West Virginia should develop graduate business teacher education programs.
- (c) Secondary school business programs should be broadened to include the following courses:
 - Basic Business
 - Business Mathematics
 - Business English
- (d) The business teacher education program should provide for general certification, and the fifth year should contain 34 semester hours of advanced general and business courses.
- (e) West Virginia business teachers should take a more active part in their professional organizations.
- (f) West Virginia colleges and the University should furnish better business education leadership.
- (g) West Virginia should continue active study of its business education program to bring about continued improvements.

227 pages. \$2.84. MicA 55-303

THE STATUS OF HIGH-SCHOOL RADIO SHOP INSTRUCTION IN THE UNITED STATES

(Publication No. 10,764)

Joseph Chester Dolan, Ed.D.
University of Washington, 1954

Supervisor: Homer Boroughs, Jr.

A number of approaches are open to the individual who desires to learn the fundamentals of radio theory: the apprenticeship program; amateur radio; the correspondence school; the armed-forces school; the public or private technical school; the high school; and the engineering college.

The purpose of this study was twofold: (1) to determine the present status of high-school radio in the United States with regard to universality, to trends in methods, equipment, and course content, and to teacher preparation, and (2) to formulate suggestions for more effective correlation of high school radio training and the other radio-training agencies in the United States.

Facts and opinions were gathered by questionnaire from five groups: (1) state departments of education, (2) selected city school systems, (3) selected teachers of high-school radio, (4) selected teacher-training institutions, and (5) selected members of the radio industry.

The study shows that high-school radio shop instruction in the United States is rather rare. Wide variation exists with respect to teacher preparation and standards regarding course content and method are few.

A definite need exists for high-school radio shop training. Such experience can be of value to three groups: (1) the prospective apprentice radioman, (2) the prospective technical-school student, and (3) the hobbyist. The needs of these three groups

might be met by one-year of training given during the junior or senior year. It should be part of the industrial-arts program and should follow experience in electricity. Fundamental concepts should be taught rather than servicing methods. The student should learn to use the tools and materials peculiar to radio.

The basic radio training should be developed around a series of problems in which the student has an opportunity to construct circuits as well as study the theory of operation. It should be divided into a number of logical areas or topics. Each topic should be taught by means of a group of related problems, lectures, reading assignments, and discussions. Following is a typical list of topics:

- (1) Review of electrical fundamentals including Ohm's Law.
- (2) Introduction to the basic components used in radio: the capacitor, the inductor, and the resistor.
- (3) Study of symbols, definitions, and terms.
- Learning to read diagrams.
- (4) DC and AC circuits using various combinations of resistors, capacitors, and inductors. Measuring instruments.
- (5) Study of tube types.
- (6) Basic circuits: the amplifier, the detector, and the oscillator.
- (7) Coupling circuits.
- (8) Tuning.
- (9) Power supplies.
- (10) One-tube and two-tube transmitters.
- (11) Modulated transmitters.
- (12) Antennas.
- (13) Loudspeakers, microphones, phono pickups.
- (14) One-tube, two-tube, and three-tube receivers.
- (15) The TRF receiver.
- (16) Heterodyning.
- (17) Building the superheterodyne.
- (18) Audio amplifiers.

The radio shop should be taught in the electric shop, if possible, to economize on equipment. Breadboards and kits should be used in planning specific equipment for the radio experiments.

Suggested textbooks are: Marcus and Marcus, Elements of Radio; Marcus and Levy, Elements of Radio Servicing; Watson, Welch, and Eby, Understanding Radio; and the Amateur Handbook.

In order that high-school radio may become more widespread more radio teachers must be trained. In addition to the usual required courses in education and the liberal arts, the following courses are recommended for the prospective radio teacher:

(1) College algebra	3-5 quarter hours
(2) Trigonometry	3-5 quarter hours
(3) Analytical geometry	3-5 quarter hours
(4) Calculus	9-15 quarter hours
(5) Physics	6-10 quarter hours
(6) Chemistry	3-5 quarter hours
(7) Electricity	6-10 quarter hours
(8) Radio theory	6-10 quarter hours
(9) Shop courses (wood, metal, drawing, crafts, etc.)	9-15 quarter hours

Trade experience is also recommended for the prospective radio teacher. This should be under the

guidance of the teacher-training institution. Amateur experience is recommended whenever possible.

A methods course should be planned specifically for prospective radio shop teachers. This course should give the prospective teacher experience in planning a course of study, planning and equipping a radio shop, and experience in classroom management and control.

473 pages. \$5.91. MicA 55-304

A PROPOSED PROGRAM OF EXTENSION SERVICES FOR MEMPHIS STATE COLLEGE

(Publication No. 10,667)

Sam Howard Johnson, Ed.D.
New York University, 1954

Chairman: Professor Walter A. Anderson

This study was designed to develop sound and feasible proposals for the improvement of extension services at Memphis State College.

Normative survey research methods, including personal visits, interviews, questionnaires, and examination of personnel records were used in gathering the data. It is a study of the needs for extension services by teachers and supervisory personnel in West Tennessee schools and proposals through which Memphis State College can best meet these needs. The study accepts the idea that personal interests and needs, expressed by teachers in service, merit college consideration in program formulation. Also, the study takes cognizance of professional needs which have been determined by other studies in other areas.

Significant implications for teacher education services in West Tennessee were formulated from the study of information presented under these topics: how the present program is determined, limited, organized and administered; college responsibilities and college staff willingness to participate in teaching and developing extension services; present status of teacher preparation; teachers' identification of factors that influence their approval and disapproval of extension; teachers' opinions of general and specific needs which they have that may be met through extension services; teachers' suggestions for improving extension services, and for extension activities and services which will aid their professional growth; laymen's responses to questions about teachers' needs for in-service education.

The results from the previously mentioned research procedures are presented in tabular, anecdotal, and narrative form and reveal the following significant conditions:

1. Many members of the college staff are unfamiliar with the extension program.
2. The college staff is willing to cooperate in improving extension services if such factors as

- adjustment of campus loads, salary improvement, and more convenient time and location of classes can be arranged.
3. The teachers in service are more interested in credit courses than in non-credit courses. This seems to result from the fact that 41% of the teachers have no degree.
 4. The college staff is interested in providing new non-credit services such as: film services, library services, speakers for professional meetings, and information and research services. Teachers in the field show relatively little interest in these services.
 5. Teachers indicate their most significant needs to be improved teaching procedures in line with current demands on the school, better understanding of the philosophy and aims of present day education, and assistance in teaching social studies and mathematics.
 6. Teachers are concerned with: evaluating behavior, planning guidance programs, teaching reading, and improving human relations.
 7. Teachers' suggestions for improving extension services emphasize dealing with practical teaching problems and providing more materials and resources for teachers.
 8. West Tennessee teachers generally approve of extension courses in nearby centers for reasons of personal convenience, such as: home responsibilities which prevent campus attendance, shorter distances to travel, financial savings, and quicker completion of degrees while teaching.

Considering the conditions which have been presented, the Extension Division of Memphis State College should plan courses which will aid teachers in completing their degrees as quickly as possible. To provide such courses, an orientation program for the college staff is needed, so that a better understanding of the purposes of extension and more participation in the program by the staff may be realized.

This study points out needs that West Tennessee teachers say they have for extension services. The staff at the college is adequate and willing to share in extension improvements. New services will require additional financial support and additional teaching materials made available to extension centers.

To provide new and improved extension services that will promote the professional growth of West Tennessee teachers is a challenge to Memphis State College. This study proposes that the challenge be met decisively. 171 pages. \$2.14. MicA 55-305

**A STUDY OF THE PROFESSIONAL PROBLEMS
RECOGNIZED BY BEGINNING TEACHERS AND
THEIR IMPLICATIONS FOR A PROGRAM OF
TEACHER EDUCATION (AT STATE UNIVERSITY
OF NEW YORK TEACHERS COLLEGE
AT BROCKPORT)**

(Publication No. 10,673)

Frank T. Lane, Ed.D.
New York University, 1954

The Problem

This study proposed to identify beginning elementary teachers' problems and suggest means of reducing their future incidence.

It grew from a dissatisfaction, at State University of New York Teachers College at Brockport, with phases of the preparatory program relating to methods and materials of instruction and classroom organization, and the desire to identify beginners' problems as a basis for revising the professional sequence.

Procedures and Types of Data

An open-response questionnaire was used bi-weekly during the fall semester by 1953 Brockport graduates who began teaching in New York State public schools, to report professional problems, their causes, and degrees of concern caused by them.

Administrators of beginners and selected alumni reported data concerning problems, causes, and concern, on questionnaires employing a classification of beginners' problems.

Data were examined to identify problem areas for which there was a need for reduction of future incidence, or further study, and the persons responsible for such reduction or study.

Data Reported

Seventy-three beginners (69 per cent) reported 383 problems which were classified into twenty categories.

Responses were received from administrators of fifty-nine beginners (56 per cent), and from thirty-two of the alumni (48 per cent) to whom questionnaires were sent.

Categories for which beginners reported the greatest number of problems and concern were "Non-Disciplinary Provisions for Children," "Methods of Instruction," and "Control (i.e., Discipline); specific areas were "providing for individual differences," and "lack of fundamental methodology for teaching some phase of 'subjects' or activities."

Administrators and alumni also reported these three categories as outstanding.

None of the remaining seventeen categories appeared as an outstanding source of difficulty.

Administrators expressed noticeably greater concern than beginners for problems of "Control (i.e., Discipline)." Alumni and administrators expressed noticeably greater concern for problems of "Providing Educational Activities," and "Planning."

Beginners reported college preparation as the leading cause of all categories except "Inter-personnel

Relations," for which they reported "induction into the new school" as the leading cause.

Administrators and alumni also reported college preparation as the greatest cause of problems.

In general, course work was indicated as a greater cause of problems than student teaching, and "ineffective inclusion" was somewhat more important than "omission" from course work.

Conclusions

Small numbers of problems reported in many categories and wide distribution of problems among sub-areas of categories did not allow identification of many areas for which revision of the professional sequence could be indicated conclusively as the means of reducing future incidence.

Analysis of data indicated that the college should assume primary responsibility for reducing future incidence of problems of "Non-Disciplinary Provisions for Children" and "Control (i.e., Discipline)" and for further study of problems of "Methods of Instruction," "Evaluation," "Providing Educational Activities," "Planning," "Sources," "Attendance Register," "Classroom Organization," and "Teacher's Routines."

It was found that the college should share responsibility with public school administrators for reducing future incidence of problems in the sub-area of "providing for the pupil who is atypical," and for further study of problems of "Materials and Equipment," "Clerical Responsibilities," "Daily Schedule," and "Curriculum Content."

It was found that administrators should assume primary responsibility for further study of problems of "Inter-personnel Relations."

No need was found for further study or reduction of future incidence of problems of "Teacher-Parent Relations," "Miscellaneous," "Pacing," "Opening Day and Week," and "Professional Behavior and Ethics."

Suggested Applications

The study should be considered by college staff and public school personnel connected with student teaching in reviewing and revising current practices in the teacher education program, and by public school personnel in identifying, and reducing the incidence of, beginning teachers' professional problems.

267 pages. \$3.34. MicA 55-306

AN EVALUATION OF THE STUDENT-TEACHING PROGRAM ON THE SECONDARY LEVEL AT CENTRAL MISSOURI STATE COLLEGE

(Publication No. 10,674)

Raymond William Lansford, Ed.D.
New York University, 1954

Chairman: Professor Paul S. Lomax

STATEMENT OF THE PROBLEM

The purpose of this study was to evaluate the student-teaching program on the secondary level

at Central Missouri State College. The problem was divided into five parts:

(1) to determine the current student teaching practices at Central Missouri State College; (2) to ascertain to what extent and in what way these practices meet the requirements of the American Association of Colleges for Teacher Education; (3) to identify the improvements that are needed for this program; (4) to indicate how the analysis of this study can improve the current program; (5) and to show how the current practices at Central Missouri State College compare with national trends in teacher education.

PROCEDURE

Standard VI of the American Association of Colleges for Teacher Education was accepted as the most reliable criterion for the study. Part I of Standard VI was used to collect factual information about the program from the college administrators.

Part II furnished evaluative information from 238 subjects that represented college personnel, supervising teachers, high school principals, and high school teachers who had been closely associated with the program during the three year period of 1949-52.

SUMMARY AND CONCLUSIONS

The evaluative instrument was concerned with six phases of the student-teaching program. The responses show phase two and three as the lowest with 33 per cent rating the program below average while phase number five was rated highest with 54 per cent rating the program above average. The over-all rating for the six phases, show 26 per cent felt the program was below average and 39 per cent felt the program was above average.

RECOMMENDATIONS

The analysis of the factual information, the evaluative responses, the interviews, and the ratings of the state college educators were measured by the standards and policies set up by the American Association of Colleges for Teacher Education. From this analysis, the following recommendations were among those made for the improvement of the student-teaching program of Central Missouri State College. It is recommended:

1. That the prospective student teachers have more of a responsibility to participate in the laboratory school and community functions for a period of four years.
2. That there be a seminar course in the senior year which would be a requirement for all student teachers after the completion of the student-teaching experience.
3. That student teaching be extended to a full day for one term.
4. That some provision be made for additional student-teacher training during the fifth-year program.
5. That the Head of Teaching Practice and the head of the college departments work more

- closely in the assignment of student teachers.
6. That the teaching load of the laboratory teacher be adjusted, as nearly as possible, to that of the regular college teacher.
 7. That consideration be given to ways of encouraging student teachers to share in the developing their own laboratory experiences.
 8. That further attention should be given to off-campus student teaching to supplement the campus teaching.

264 pages. \$3.30. MicA 55-307

**EXPRESSED VALUES OF SELECTED
JUNIOR HIGH SCHOOL STUDENTS AND THE
RELATIONSHIP OF THESE VALUES
TO SOCIO-ECONOMIC STATUS**

(Publication No. 10,647)

Philip Rothman, Ph.D.
New York University, 1954

The Problem

Recent studies indicate that value orientations may be considerably influenced by socio-economic backgrounds. Teachers are to a great extent unaware of this relationship between values and socio-economic background. The purpose of this study is to test the hypothesis that there is a relationship between the expressed values of junior high school students and the socio-economic status of the junior high school students.

Design of the Study

In this study values were considered as those guides to life which are prized and cherished, and which are the result of judgement or appraisal. Rather than attempt to investigate such values directly, an investigation was made into the underlying factors which presumably lead to such values. This was done by the use of instruments providing opportunities for expression in the areas of thinking, purpose, aspiration, attitude, interest, action, feeling and belief. These instruments were used to collect data from the ninth grade students of a selected school. These students were then rated by the investigator in terms of the Warner Index of Status Characteristics. Using these ratings, the investigator selected two sample groups, representing the upper-lower class and the lower-middle class. These two adjacent classes produce the bulk of public school population. These groups, sharply separated in terms of social class, were equated for other pertinent factors. Some of the instruments were scored in quantitative measures. In such cases differences between the averages were examined for statistical significance. Other instruments were used in which the frequency of reference to each category was tabulated and the distributions of categories for the two classes

involved were compared by the use of Chi Square. In both cases the five per cent level of confidence was set as the standard.

Conclusions

In general, the data gathered fail to support the hypothesis that junior high school students of different socio-economic status show different patterns of purpose, aspiration, attitude, interest, action, feeling, thinking and belief. In no case was the over-all pattern of difference statistically significant. The following differences, however, did emerge: a greater amount of aspiration and purpose, and more emphasis on college, singing and dancing lessons and attending meetings were expressed by the lower-middle class students; more time spent on jobs and sports and more intentions of entering the military services were expressed by the upper-lower class students.

Implications

Although the findings are essentially negative, it is possible that the differences which were found are of such a nature as to be extremely important in the lives of the students. If this is true it is highly important that the nature of these differences be thoroughly explored and understood by the teachers of these students.

On the other hand, it is possible that the obtained differences are simple, realistic adjustments to economic difference which do not greatly affect the inner life of the students.

It is possible that the lower-middle class and upper-lower class are not distinct social class groups, or it is possible that social class differences do not exist at this level.

Differences within each social class are greater than the differences between the averages of the two classes. This seems to indicate the need for the teacher to deal with students as individuals. It would seem to re-emphasize the futility of using categorization as a method of dealing in human relations and the necessity of remembering and working with the uniqueness of each student.

165 pages. \$2.06. MicA 55-308

**A CRITICAL EVALUATION OF THE MALE
GRADUATE PHYSICAL SKILLS NEEDS PROGRAM
PERTAINING TO PROFESSIONAL PREPARATION
FOR PHYSICAL EDUCATION AT
NEW YORK UNIVERSITY**

(Publication No. 10,679)

Alvin Christian Saake, Ed.D.
New York University, 1954

Chairman: Professor Leonard A. Larson

The Problem

The problem of this thesis is to make a critical evaluation of the male graduate physical skills needs

program pertaining to professional preparation for physical education at New York University in order to establish classification standards for identifying skills needs. To accomplish this objective it was necessary to consider five supplementary problems: (1) What are the objectives of the graduate skills program in physical education? (2) What are the component skills of the physical education activities? (3) What scales of measurement can be applied to the selected physical education skills? (4) What are the evaluation standards for each appropriate skill? (5) What are the statements of administrative procedure that make this study practical for New York University?

Procedure

By personal interview and/or a survey by letter the policies of the skills program in physical education at New York University and at a selected list of representative graduate schools were established. A minimum battery of activities found in every program at the selected schools was compiled. Within this selected logical grouping the component skills of the various activities were identified. The relative importance of the components was decided by a thorough study of the professional literature and/or by a poll of the judgment of experts in the various activities. The importance of the components was tallied. For administrative reasons and for practicability of the study an appropriate test was selected. A pilot study was conducted with graduate students. The tests were scaled, tested, scored, compiled, proved sufficiently valid and reliable, and correlated. The results of the tests were used to establish the norms for classification purposes. The norms were accepted by the Graduate Committee of the Department of Physical Education.

The implementation by means of the transcript review, the questionnaire, the personal interview and the classification tests substantiated the extensiveness of the study and emphasized its practical nature.

Conclusions

It is recognized that institutional differences will not permit the standards and recommendations determined by this study to be followed without variations. However, certain conclusions may be made:

1. Evidence presented in this study tends to indicate that few, if any, graduate programs have solved the problem.
2. The majority of schools have found it administratively practical to keep the skills requirement an undergraduate requirement.
3. Agreement was found in the majority of cases in polling experts on the most important components of the various activities.
4. The selected minimum battery of activities was included in the program of the schools selected for quality and for geographical representation.
5. The major activity areas included (1) group games of low organization, (2) dual and single games, (3) group games of high organization, (4) rhythms and dances, (5) gymnastics and stunts, and (6) aquatics.

6. The tests suggested in the final battery are valid for classification purposes.

7. The tests suggested are particularly desirable for classification purposes because (a) they are easy to administer, (b) they can be administered indoors, (c) the equipment is inexpensive and already available at New York University, (d) graduate assistants can be easily trained to administer the tests, (e) the entire battery of tests can be given in a short time.

8. Skill in the minimum battery of activities assured adequate skill in countless games of low organization.

9. Judgment of experts who are eminently qualified to judge proved to be available and valid for broad classification purposes.

Recommendations

1. Further study for each activity should be made and as better tests are devised they will supplement this study.

2. It would be desirable to secure valid and reliable norms on a national scale for all activities in the undergraduate and graduate programs for both men and women.

201 pages. \$2.51. Mic 55-20

A DETERMINATION OF CRITERIA FOR SELECTION OF LABORATORY EXPERIENCES SUITABLE FOR AN INTEGRATED COURSE IN PHYSICAL SCIENCE DESIGNED FOR THE EDUCATION OF ELEMENTARY SCHOOL TEACHERS

(Publication No. 10,653)

Allen Dale Weaver, Ph.D.
New York University, 1954

The Problem

The purpose of this investigation was to determine criteria for the selection of laboratory experiences suitable for an integrated course in physical science designed for the education of elementary school teachers.

Method

A list of objectives of science education was compiled by the investigator from a review of publications in the field. These objectives were analyzed on the following bases: (1) they must be in the field of physical science; (2) they must be suitable for the education of elementary school teachers, and (3) they must be of such a nature that laboratory experiences can make a significant contribution toward their attainment by the student. A final list of objectives in conformance with these criteria resulted.

A list of forty-three criteria for the selection of laboratory experiences was developed by adaptation of pronouncements of authorities in the field. These criteria were evaluated in terms of the objectives by a jury of sixteen teachers of physical science in teachers colleges throughout the nation. Six of the criteria were rated essential and thirty-six desirable.

One was rejected. The six essential criteria follow:

Each experience must:

1. Emphasize careful observation by the student in gathering data.
2. Encourage the student to distinguish between reliable and unreliable evidence.
3. Be presented in a clear, concise manner.
4. Be so presented that the objectives are clear to the instructor and become clear to the student during the course of the experience.
5. Encourage the formulation of conclusions consistent with the data.
6. Be of such an order of difficulty that the student, through reasonable effort, may gain the satisfaction of accomplishment.

All published experiments in the fields of physical science were examined and analyzed in terms of the criteria. Fifty-five experiences were constructed and/or selected and revised by the investigator to meet the six essential criteria, and as many of the desirable criteria as possible for each experience. Another jury, like the one mentioned above, evaluated a sampling of eighteen of these experiences in terms of the criteria. Included with this group of eighteen experiences sent to the jury, was a sampling of two of those rejected by the investigator as not meeting the essential criteria. The chi square test of significance was applied to determine whether each experience was accepted by the jury in terms of each criterion.

Findings

The eighteen experiences met the requirements of four of the six essential criteria. Seventeen of the eighteen experiences met the requirements of five of the six essential criteria. Fourteen of the eighteen experiences met the test of the six essential criteria.

Fourteen of the eighteen experiences met eleven or more of the thirty-six desirable criteria. One experience met nineteen of the thirty-six desirable criteria.

In the judgment of the jury, each of the two experiences which the investigator had rejected met two of the six essential criteria. One of these experiences met three, and the other four of the thirty-six desirable criteria.

Conclusions

(1) The six essential criteria developed in this study are all useful in the selection or construction of laboratory experiences.

(2) The thirty-six desirable criteria developed in this study are useful in varying degrees in the selection or construction of laboratory experiences.

(3) Of the fifty-five experiences constructed and/or revised by the investigator, the eighteen, selected at random and evaluated by a jury of sixteen teachers of physical science, are all better in terms of the six essential criteria and the thirty-six desirable criteria,

in the judgment of the jury, than are two other experiences selected at random from published laboratory manuals.

(4) In the judgment of the investigator, based upon his experience in using the experiences in a physical science course for the training of elementary school teachers, and based upon the judgment by the jury in terms of the criteria of the sampling of eighteen experiences, the fifty-five experiences presented in this study include more than enough highly desirable experiences for a course offering one two-hour laboratory period per week for thirty-six weeks.

387 pages. \$4.84. Mic 55-21

EDUCATION, THEORY AND PRACTICE

IMPLICATIONS OF SOCIAL CLASS STRUCTURE AND DEVELOPMENTAL TASKS FOR TEACHING TECHNIQUES IN HOME AND FAMILY LIFE EDUCATION

(Publication No. 10,779)

Mary Elizabeth Evans, Ed.D.
North Texas State College, 1954

The hypothesis upon which this study was developed stated that teaching techniques which are compatible with the frames of reference peculiar to the adolescent's social class structure will prove effective in assisting him to achieve certain developmental tasks when the content of the subject matter offering is focused on the solution of the adolescent's problems. In order to test such a hypothesis, available resources were investigated to determine:

1. Previous research related to:
 - (a) characteristic behavior patterns observed in the lower and middle classes
 - (b) implications of social class patterns for the public school system
 - (c) psychological and sociological findings related to the study
 - (d) the general and specific nature of the developmental tasks of adolescence
2. The status of youth in the Home and Family Life Education Program in Texas
3. Characteristic patterns observed in the social class groups represented in the study
4. Implications of data for content of instruction in Home and Family Life Education in the Secondary Schools of Texas
5. The implications of data for the development and/or selection of teaching techniques compatible with and meaningful in the frame of reference held by the subjects

6. The practical value of the proposed "culturally fair" teaching techniques.

Data related to these specific questions evolving from the hypothesis were acquired from: (1) reports of related research, (2) responses of 505 adolescents throughout the state of Texas to a battery of tests and scales, and (3) an experimental study conducted over a period of nine months.

Reports of related research, data regarding the status of adolescents enrolled in homemaking programs in Texas, and characteristic patterns peculiar to the representative social classes were examined to determine their implications for the subject matter content and teaching techniques of home and family life education. An analysis of the content areas in home and family life education was presented. The analysis indicated the relationship of learning experiences incorporating the content of these respective areas to the solution of problems most commonly recognized by adolescents and to the achievement of certain developmental tasks. On the basis of this analysis "culturally fair" teaching techniques were constructed, adapted, and utilized with an experimental group for a period of nine months. At the end of the nine months period the growth of the experimental group in specified areas was compared with that exhibited by an equated control group. In the areas tested, the experimental group demonstrated a degree of growth which could not have been due to chance in as many as one per cent of the cases while the growth exhibited by the control group was negligible.

Within the limitations of this study and to the extent to which the sampling used in the survey was representative of adolescents in the entire population of the state, one may conclude that,

1. Adolescents in each of the social classes have patterns of values and frames of reference peculiar to their respective class.
2. The value of content materials presented in a learning experience are dependent on the learners' reaction to the materials.
3. An adolescent measures the desirability of a learning experience in terms of how it will affect his status in his peer group.
4. A child's concept of himself and his relationships with others may be significantly affected by mastery.
5. Specific qualifications should be considered for techniques to be utilized with lower-class adolescents.
6. "Culturally fair" teaching techniques were effective in assisting adolescents to solve their recognized problems and achieve their developmental tasks.

591 pages. \$7.39. MicA 55-309

A STUDY OF THE EXTENT AND DESIRABILITY OF GUIDANCE INFORMATION AND PRACTICES IN MICHIGAN SUMMER CAMPS FOR CHILDREN

(Publication No. 9943)

John August Friedrich, Ph.D.
Michigan State College, 1954

The Problem. The purpose of this study was: (1) To secure a comprehensive picture of the extent of guidance information, practices, and procedures in Michigan summer camps for children; (2) To determine the desirability of these practices as expressed by various camping authorities; and (3) To determine other general information concerning guidance in Michigan summer camps.

Methods, Techniques, and Data. Data were obtained from 265 (representing about 70 per cent) of Michigan summer camp directors and from 20 authorities in the field of camping, through the use of questionnaire forms. Questionnaire returns were transferred to IBM cards, tabulated, and analyzed. Various other non-tabulated data were interpreted and analyzed. Furthermore, comparisons were made between actual practices and desirability of practices as indicated by authorities.

Findings and Conclusions. A great deal of information concerning the general nature and type of summer camps in Michigan was revealed in this study. Various other information concerning guidance practices in camps was disclosed. It is assumed that the claims made by the various camps in this respect are reasonably valid. Results of this phase of the survey are as follows:

1. In general, the extent of guidance information concerning campers actually in the possession of summer camps is rather limited. All of the information was indicated as being in the possession of some of the camps. The most information available was found to be in the areas of health and personal characteristics, whereas the least was indicated in the area of home background. The most common items of information concerned health, skills, abilities, hobbies, and interests, while the least common were record of school grades and record of intelligence.

2. Sources for obtaining information were very limited, and the amount of information obtained from various sources was quite small. Most information was obtained from camp files, whereas the least was secured from schools and other camps.

3. Proportionately, more private camps possessed more of the various types of information than was the case with organizational camps, and the latter in turn indicated having more of the information than was the case with church camps.

4. Proportionately, more of the small camps possessed more extensive information on campers than medium-sized camps, whereas medium-sized had more than the large camps.

5. A greater percentage of long-term camps possessed guidance information concerning campers than was the case with short-term camps. Camps with three or less periods had proportionately more guidance information than those with four or more

periods. A greater percentage of camps with low camper-counselor ratios (seven to one and less) possessed a greater extent of guidance information on campers than did those with higher ratios (eight to one and more). Boys' camps tended to have more guidance information than girls' camps, and the latter had more than coeducational camps.

6. The extent to which the various guidance tools, techniques, and practices were followed by the camps was quite limited.

7. In reference to most practices, less than 50 per cent of the camps followed a majority of them to any extent at all, while less than 30 per cent of the camps on an average indicated using the practices "much". The areas in which the greatest extent of practices were indicated included counseling practices, personnel selection practices, practices to help counselors, and administrative practices.

8. The areas of guidance practices indicated as being followed by the fewest camps were tests and inventories, special techniques (i.e. case studies), techniques to help campers directly (i.e. guidance classes), and record and report forms.

9. A few camps employed all the practices. However, the majority of camps employed only about half of the practices listed.

10. Private camps followed the guidance practices to the greatest extent, organizational camps indicated less than these, and church camps followed them the least.

11. Both small and large camps indicated that they followed the guidance practices to a slightly greater extent than medium-sized camps. Camp size is evidently of little significance relative to the extent of guidance practices.

12. Camps with four or more camp periods followed the practices slightly more than those with three or less. Camps with lower counselor-camper ratios tended to follow the practices more extensively than those with higher ratios. Proportionately more long-term camps tended to follow the practices than short-term camps.

13. Almost all of the information concerning campers was considered to be desirable by a majority of the twenty authorities serving as an appraisal jury. The only exceptions were information concerning intelligence and information on school grades.

14. Most of the tools, techniques, and practices concerning guidance in camping were considered to be desirable by camp authorities. Those considered to be undesirable by the majority of authorities were: (a) Providing camp courses in guidance; (b) Using audio-visual aids dealing with guidance; (c) Providing a special work program; (d) Employing directive counseling methods; (e) Providing a special place where individual counseling can be done; (f) Providing for the services of a guidance specialist; (g) Using intelligence and other tests; (h) Using adjustment inventories; and (i) Using sociograms.

15. The extent of information in possession of camps tended to parallel the extent of desirability of this information. The information considered by the authorities as most desirable was more in evidence among camps, whereas the less desirable information

was less in evidence. This was also the case in reference to guidance practices.

16. The majority of camp directors felt there was much room for improvement of guidance practices in their camps.

17. All of the authorities felt there was room for much improvement in the type of camp they represented.

18. A third of the camps indicated that ten per cent or more of their campers came to camp with serious problems.

19. As indicated by camp directors, the main causes for campers being unhappy in the camp situation were failure to adjust to the camp group, home maladjustments, and fear of new experience.

20. The main handicaps to promoting effective guidance in summer camps were lack of a trained staff, insufficient time, and lack of finances.

21. Some of the best features of camps relative to guidance as indicated by some directors are a well trained, cooperative staff, individual counseling, and a permissive flexible program.

22. The primary means suggested by camp directors by which the Michigan Camping Association and Michigan colleges and universities can help to improve guidance in camps are by providing more guidance literature and materials and by assisting camps in selecting, recruiting, and training counselors.

23. According to camp authorities, the most important things camps can do to promote and foster more effective guidance of campers are to train and provide better staff members and to put more stress on guidance in the camp program.

24. The main attitude toward guidance in camping seemed to be that it is a good thing and that it needs to be more thoroughly interpreted and implemented in Michigan camps.

407 pages. \$5.09. MicA 55-310

A STUDY OF GRADUATE ART EDUCATION IN THE WESTERN ARTS ASSOCIATION AREA

(Publication No. 10,663)

Wellington Burbank Gray, Ed.D.
New York University, 1954

This study is concerned with establishing the objectives, discovering the curriculum content of present programs of graduate art education in the Western Arts Association area, the evaluation of present programs by graduates and graduate students, and the solicitation of professional opinion on the several phases of programs by leaders in the field and by the "consumers" of the product of the graduate programs. The scope of the problem is limited to the objectives and curricula of the graduate art education programs in the Western Arts Association area. The problem is important in that it sheds light on current practices in curricula, current philosophies as far as objectives are concerned, and states a recommendation for a broad general

program of graduate art teacher training for institutions within the Association area.

Procedures involved in the collection of data are established for the location of material; establishment of the instruments used; construction of mailing lists; establishment of committees of experts, leaders, and supervisors; and determining the recommendations. Present programs in graduate art education within the Association area are discussed in relation to statements made by administrative officers, graduates, committees of leaders and supervisors, and by descriptions of the specific programs of eight teachers' colleges, fifteen state colleges and universities, ten other state-supported colleges, eight liberal arts institutions, three municipally-controlled universities, and three professional art schools in fifteen states of the eighteen state area of the Association. The discussion is based on questionnaires answered by institutional administrators and graduates, opinionnaires answered by committees of leaders and supervisors, and verifying interviews with institutional administrators or their representatives, as well as printed sources.

The history of graduate degrees in general and graduate art education in particular, especially in the Association area, is traced in detail. A general statement of the beginnings of degrees in the university of the Middle Ages and the specialized degrees on the several graduate levels is discussed in detail.

Results are contained in the conclusions reached. It is concluded that there are three graduate levels which are practical. It is shown also that there are two philosophies as to the concept of the graduate degree in art education - professional and research.

It is recommended that there be two pathways through graduate degrees. The research pathway proceeds from the bachelor's degree through the Master of Arts to the Doctor of Philosophy. The professional design starts with a baccalaureate degree and proceeds through the Master of Science, the Master of Art Education to the Doctor of Education. Recommendations are also established for specific objectives, the research project or practical problem, language requirements, and the balance between the three major areas of preparation for each degree mentioned.

The functional plan recommended gives ample leeway to institutions to present specialized requirements dependent on institutional policies and philosophies. Such a plan, while permitting freedom, provides for an adequate and substantial education on the graduate levels for teachers of art in the Western Arts Association area.

306 pages. \$3.83. MicA 55-311

A SUMMER ENRICHMENT PROGRAM FOR GLEN RIDGE BOYS AND GIRLS: A PROPOSED ENRICHMENT PROGRAM FOR GLEN RIDGE, NEW JERSEY, DEVELOPED THROUGH THE VOLUNTARY PARTICIPATION OF STUDENTS, TEACHERS, ADMINISTRATORS AND LAY PEOPLE

(Publication No. 10,670)

John F. Kinney, Jr., Ed.D.
New York University, 1954

Chairman: Professor Frithiof C. Borgeson

The problem was to develop a twelve-month school program for Glen Ridge, New Jersey, through the voluntary participation of students, teachers, administrators and lay people. If the proposed program were accepted by the school and community, there would be an evaluation of the first year's operation; if it were rejected, an analysis of the reasons for this decision would be made.

Two types of twelve-month school programs have existed during the last half-century. One type, which flourished from 1910 to 1930, was designed to help students accelerate their progress in school through the institution of summer sessions which emphasized academic achievement. The other type came into prominence following World War II. Its purpose was to provide educational and recreational activities for boys and girls during the summer months. The Glen Ridge plan was patterned after the second type of all-year school program.

The democratic procedures employed in this study involved the organization of a volunteer group of students, teachers, administrators and lay persons into a Study Group which was subdivided into a Steering Committee and topic area committees. Leadership for the study was furnished by the Steering Committee whose responsibilities included direction and coordination of the project. The topic area committees considered the various aspects of the problem such as: Organization and Administration; Content; Personnel Policies; Publicity; and Finance. The final program was prepared by the Study Group from material supplied by the topic area committees.

In the course of its work, the Study Group voted against the construction of a twelve-month school program because it questioned the fairness of a rotation policy which guaranteed participants a subsidized vacation and one summer for study or travel. The Study Group suggested, instead, that an Enrichment Program of summer activities be developed which would be completely separate from the regular school term. When finished, this Enrichment Program was submitted to the teachers and the members of the Board of Education for their reaction. Fifty-two percent of the school staff indicated their support of the proposed program while fourteen teachers volunteered for summer service. The Board, however, rejected the program explaining that its high cost could not be sustained. It further stated that it would be appropriate to reconsider the plan when school expenditures had decreased.

Although the plan was not approved, a comprehensive

report of the study has been prepared. Included in this report are recommendations for the development of a twelve-month school program based on the Glen Ridge experience which may help other communities contemplating similar projects.

131 pages. \$1.64. MicA 55-312

**THE BOOKKEEPING ACTIVITIES
OF NON-BOOKKEEPERS**

(Publication No. 10,677)

Earl George Nicks, Ed.D.
New York University, 1954

Chairman: Peter L. Agnew

Purpose of the Study

The purpose of this study is to determine what bookkeeping activities are performed by office workers other than bookkeepers, and thereby to provide a basis for determining the kind of training they need.

Procedure of the Study

A survey was made of the bookkeeping duties of 505 non-bookkeepers. A questionnaire completed by the respondents included 59 bookkeeping activities which a non-bookkeeper might perform. Each office worker indicated which activities he experienced, their difficulty of learning, and whether they should be learned in school or on the job. The National Office Management Association assisted in distributing the questionnaire to representative office workers throughout the United States.

Treatment of the Data Gathered

Data supplied by the 505 non-bookkeepers were analyzed and compared according to: frequency; difficulty; preference for in-school or on-the-job learning; job classifications; amount of bookkeeping training; kinds of firm; size of office staff; and amount of office experience.

Conclusions

1. The bookkeeping activities of non-bookkeepers are easy to learn.
2. The frequency with which bookkeeping activities occur in an office has little or no relation to learning difficulty.
3. The bookkeeping activities of non-bookkeepers are isolated routine duties that can be carried out without a knowledge of the principles and theory of bookkeeping.
4. One year of bookkeeping training has little effect on the bookkeeping activity of non-bookkeepers during their first year with a firm.
5. The 59 bookkeeping activities included in this study should be given greater emphasis in the training program of non-bookkeepers.
6. Bookkeeping training of non-bookkeepers should be the same whether they are going into manufacturing or non-manufacturing firms.

7. Bookkeeping training of non-bookkeepers should be the same whether they expect to find work in small, medium, or large office staffs.

8. Secretaries experience more bookkeeping routines than do non-bookkeepers in other job classifications.

9. The number of bookkeeping activities experienced by non-bookkeepers is not large.

10. The per cent of non-bookkeepers performing various bookkeeping activities is small.

11. If the bookkeeping training of non-bookkeepers in the secondary school is to be built around the bookkeeping activities of the general office worker rather than around the work of the bookkeeper or accountant, one year of elementary bookkeeping cannot be justified.

Recommendations

1. It is recommended that the bookkeeping activities of non-bookkeepers be taught as separate units or as an integral part of functional courses in the business education curriculum.

2. The following units are recommended for the teaching of bookkeeping activities to non-bookkeepers: (1) buying; (2) selling; (3) cash and banking services; (4) payroll; (5) notes and interest; and (6) insurance.

3. It is recommended that business forms and papers be used whenever feasible in preparing non-bookkeepers for office work of a recording nature.

4. Problems and materials used in the units recommended should be so organized that pupils will have an opportunity to use the typewriter, adding machine, and calculating machine as they go about their work in the classroom.

5. The work of each unit of bookkeeping activity should be organized so that the skills of arithmetic, penmanship, and reading can be exercised, sharpened, and evaluated.

6. It is recommended that firms interested in training their personnel select from the 59 bookkeeping activities analyzed in this document those routines which occur most frequently in their offices and incorporate them in a training program.

195 pages. \$2.44. MicA 55-313

**GROUP SOCIAL CLIMATE AND THE
TEACHER'S SUPPORTIVENESS OF
GROUP STATUS SYSTEMS**

(Publication No. 10,644)

Lucy Griffin Polansky, Ph.D.
New York University, 1954

The hypothesis of the study was derived from a theory of power formulated by Professor Louis E. Raths of New York University. The theory indicates that the power in a group is implemented most effectively through communication channels which are recognized and supported by group members. Lasswell's descriptions of eight base values of society which are forms of influence and power¹ were

conceived of as bases of representative status systems through which the communication of a group might flow and through which power might be channeled effectively.

It was hypothesized that in the intermediate grade classroom where power was being channeled effectively, as indicated by the fact that excellent group atmosphere or social climate prevailed, the teacher was supporting the group status systems which had been built during group interaction. It was also hypothesized that where poor social climate prevailed, the teacher was not supporting the group status systems.

A sample of classrooms with good and poor social climate was selected by observers employing the Wrightstone Scale² to rate classrooms after each of a total of six visits. Eight teachers who had shown poise under observation conditions, who were willing to participate in the study, and whose classrooms had been rated near an extreme of the social climate scale were chosen.

In each classroom, the verbal interaction of teacher and children was stenographically recorded during five representative periods of whole-group interaction. A content analysis was made of the teacher's verbal behavior. Each statement of the teacher was classified according to its degree of supportiveness and its direction. The categories employed in describing teacher behavior were those developed by Withall.³

When the degree of supportiveness of the teacher toward each child in his group had been recorded, the children's status positions within the group social structure were measured by means of a sociometric instrument, Characteristics of Individual Children as Observed by the Group.⁴ Relative positions of the children in each of the eight status systems specified were determined, for each classroom group. Data were examined for relationships between the teacher's degree of supportiveness and the children's status positions.

In general, the group of teachers whose classrooms had good social climate ratings supported those children described by their peers as status leaders to a significantly greater extent than they supported other children, and the group of teachers whose classrooms had poor social climate ratings did not. However, the distributions of teacher contacts among the children at varying status levels showed fluctuations from teacher to teacher which indicated that the pattern of support was not a rigid, inflexible one in either group. Comparison of the two teacher groups' degree of supportiveness toward status leaders showed differences which were statistically significant at a level indicating that such differences might be attributed to chance less than one time out of one hundred.

The hypothesis of the study was supported in the conclusion that teachers with good classroom social climate in general tended to go along with the group status systems, whereas teachers with poor classroom social climate in general did not strongly support the group status systems.

202 pages. \$2.53. Mic 55-22

1. Harold D. Lasswell, Power and Personality. New York: W. W. Norton and Co., 1948.
2. J. Wayne Wrightstone, "Measuring the Social Climate of a Classroom," Journal of Education Research, Vol. 44 (1951), pp. 341-351.
3. John G. Withall, The Development of a Technique for the Measurement of Social-Emotional Climate in Classrooms. Doctoral Dissertation, University of Chicago, 1948, pp. 37-39.
4. Published by Modern Education Service, Box 26, Bronxville, New York.

CONFICTING VIEWPOINTS ON CERTAIN ISSUES IN EDUCATION 1933 - 1950: A STUDY OF TWENTY-THREE FUNDAMENTAL ISSUES IN EDUCATION AND OF THE OPINIONS OF SIXTY-ONE LEADERS IN GENERAL TEACHER EDUCATION AND FIFTY LEADERS IN BUSINESS TEACHER EDUCATION REGARDING THESE ISSUES

(Publication No. 10,678)

John Kenneth Roach, Ed.D.
New York University, 1954

There are many issues in the field of teacher education. The purpose of this study is to examine conflicting viewpoints on such problems in order:

- (1) to determine what are the fundamental issues in the field.
- (2) to analyze these fundamental issues into their controversial elements.
- (3) to present and to interpret the opinions in regard to such issues of a large sampling of recognized leaders
 - (a) in general teacher education
 - (b) in business teacher education.

The issues contained in the study were obtained primarily from the literature in teacher education on the grounds that disagreement over teacher-education practice should find expression in the literature covering this field.

The issues dealt with were selected on the basis of their significance in determining and redefining policy in teacher education. They consist of the following problems:

1. Is federal financial assistance to education necessary in order to lessen the differences in educational opportunity?
2. Has the federal government, under our economic, social, and political theories and practices, any obligation to assure reasonably equal educational opportunity to all our youth?
3. To what extent, if any, should the federal government participate in the financial support of our schools?
4. What federal controls, if any, should accompany

- the granting of federal financial assistance to education?
5. Should the policy of granting federal aid for specific educational purposes be continued?
 6. Is unification of the program for teacher education desirable? How can such unification best be accomplished?
 7. What policy, or policies, should govern admissions to teacher-training institutions?
 8. What type, or types, of institutions should have the responsibility for the pre-service education of teachers?
 9. Should teachers colleges be professional schools, concentrating solely on the education of teachers, or should they be multiple-purpose institutions?
 10. What is the optimum number of college years needed to prepare capable students for their initial (not internship) teaching position?
 11. What should be the nature of the fifth year in the teacher-education program?
 12. Should students in teacher education be required to follow a highly prescribed curriculum?
 13. To whom, primarily, should the function of certification be given?
 14. Upon what basis (or bases) should certificates be granted?
 15. What types of teaching certificates should be issued?
 16. Who should assume the responsibility for the placement of teachers?
 17. Should examinations such as the National Teachers Examination Service be used as one phase of teacher selection?
 18. Should membership in an organization considered subversive by the state and/or federal government be sufficient grounds for dismissing teachers from publicly supported schools?
 19. Should teachers be required to take special loyalty oaths?
 20. Should the school deal with controversial issues and, if so, in what manner?
 21. Should educational associations affiliate with labor?
 22. What policies should the teaching profession adopt in its efforts to further the cause of education?
 23. What should be the place of federal social security in teacher-retirement programs?

The criterion used to determine leadership was the recognition of this quality by others in the profession. The lists were developed from leadership

nominations. Frequency of mention was used to establish each list.

The study has as one object the presentation of the opinions of the leaders on selected issues. In order to obtain these opinions, a questionnaire was constructed in the form of a check list, with the divergent viewpoints on each issue serving as multiple-choice answers.

The stand taken by the leaders on each issue is recorded in tabulated form. Their opinions then are examined and explained in terms of the major arguments advanced in support of (and against) each position.

425 pages. \$5.31. MicA 55-314

**SOCIAL AND PSYCHOLOGICAL ASSUMPTIONS
ABOUT HUMAN BEHAVIOR IN SELECTED
LITERARY WORKS: AN ANALYSIS OF THE
LITERATURE AT PRESENT REQUIRED
READING IN A SELECTED SECONDARY SCHOOL
AND THE IMPLICATIONS OF THE ANALYSIS
FOR THE IMPROVEMENT OF
INSTRUCTION IN LITERATURE**

(Publication No. 10,682)

Joseph Stephen Sherwin, Ed.D.
New York University, 1954

PROBLEM

The problems are, first, to identify the social and psychological assumptions about human behavior explicitly and implicitly present in literature assigned to students in a selected secondary school and, second, to point out possible implications of such an investigation for teachers of literature.

DEFINITION

By the phrase "social and psychological assumptions about human behavior" is meant ideas taken for granted by authors in their presentation of human activity as it concerns man and man and man as man.

PROCEDURES

English teachers in the selected school filled out a questionnaire in which they listed each literary work they assigned to one or more classes. These literary works were then analyzed for the purpose of identifying the assumptions embodied in them. To safeguard the validity of the analysis, it was necessary to use 1) the "five evidences of an assumption" mentioned in Hazel Sample's Pitfalls for Readers of Fiction and 2) a "framework" or list of possible areas of activity within which assumptions might be expected to be made. The "framework" used by the Lynds in their study of Middletown was adapted for use in this study.

Next, the assumptions identified were placed in categories derived from the assumptions themselves - an empirical classification. Last, the assembled data were reviewed and interpreted, and possible implications were discussed.

FINDINGS**General characteristics of the findings:**

1. Numerous assumptions are encountered by students.
 2. Assumptions are distributed throughout the "framework" areas.
 3. There is wide variation in the number of times individual assumptions are encountered by students.
 4. In the curriculum as a whole, certain broad, underlying attitudes or philosophies receive predominant emphasis.
 5. Patterns of assumptions are identifiable in assignments to individual classes. The class patterns cover the range between a sharp emphasis upon a single attitude toward life and an unfocused series of assumptions about various aspects of behavior.
- Implications:**
1. Study of assumptions and the evaluation of assumptions (as distinct from indoctrination) is essential to classroom work in literature; specific criteria for evaluation need to be established.
 2. Frequently occurring assumptions require classroom attention; otherwise the assumptions will do the "teaching." Also, certain infrequently occurring assumptions may deserve classroom attention so that curriculum resources (which include assumptions within all "framework" areas) may be utilized most fully.
 3. A knowledge of curriculum- and classroom-

level patterns is regarded as necessary if teachers are to know what aspects of their assignments to stress and which assumptions to select for evaluation. Patterns can and should be modified; but how they are modified would depend on what literature instruction in a particular school is intended to accomplish and on what educational practices are thought best suited to its accomplishment.

Other Insights:

1. The analyses provide evidence to support the view of the organic unity of literary form and content.
2. An ability to identify assumptions is a useful technique for literary criticism.
3. The ways literary assumptions are embodied (explicitly and implicitly) are important to teachers and students, the subtle character of implicitly embodied assumptions being especially worthy of note.
4. There is a possible relationship between the structure of literature and its effect upon readers.
5. The class discussion method possesses advantages for instruction dealing with assumptions in literature.
6. Knowing what assumptions underlie assignments does not itself indicate which assignments to retain on reading lists and which to exclude.
7. No present justification exists for devising a sequence of assumptions graded according to their presumed difficulty.

596 pages. \$7.45. MicA 55-315

ENGINEERING

ENGINEERING, INDUSTRIAL

A METHOD FOR THE DESIGN AND CONTROL OF INDUSTRIAL INFORMATION-TRANSFER SYSTEMS

(Publication No. 10,798)

Albert Harold Rubenstein, Ph.D.
Columbia University, 1954

One of the major problems in managing an industrial organization is that of designing and subsequently controlling the operation of a number of functional organization components or "systems" which are intended to process information of value to the organization. Very little in the way of design criteria or effectiveness measures is currently available for this purpose and most of the organizing (or designing) and administering (or controlling) of these systems is based on a combination of intuition and individual experience, without the benefit of established principles and procedures of design and control.

The present investigation is directed at the task of developing, as a minimum accomplishment, a reference frame within which such principles and procedures may eventually be established. In addition, it is hoped that a useful method will be presented for conducting investigations of this kind of organizational component for the purpose of:

- (1) organizing and administering them in industrial enterprises, and
- (2) accumulating findings about these systems which might contribute to the general development of organization theory.

A schematic model is presented which is similar in form to the diagram of a mechanical feed-back control or "servomechanism" system. The analogy is intended to be descriptive only. The model identifies four classes of variables which must be dealt with in the design and control of industrial information transfer systems. They are:

1. Objectives: What the system is supposed to accomplish in terms of the objectives of the organization. Why the system is required by the organization; e.g. "To help get orders out on time," might be the primary objective for a production control department or system.

2. Effectiveness Measures: How well the system is accomplishing or helping to accomplish these objectives. How one can tell if the system is paying off in terms of organizational objectives; e.g. "The proportion of orders that are late and how many days late they are (in terms of a frequency distribution)."

3. Operating Characteristics: How the system behaves in order to accomplish these objectives. The actual, observable operations of the system which result in the accomplishment of objectives; e.g. "The

information that is transferred, to whom it is transferred, and at what rate."

4. Design Characteristics: The determinants of the behavior of the system. Provisions for the ability of the system to behave in ways that will result in the accomplishment of objectives; e.g. "The information-transfer facilities provided to the system."

Part One examines the nature of these classes of variables, discussing problems of operational definition, identification, and measurement.

Part Two examines the relationships between these variables and the possibilities of establishing mathematical expressions to describe their general form. The results of approximately fifty experimental, field, and theoretical studies pertinent to these relationships are summarized in these chapters and in the appendices. Two chapters in this section deal, respectively, with models and the problem of optimization.

Part Three presents the proposed method of investigation, a discussion of problems and techniques of measurement, a procedure for initiating a design-control study in an operating organization, and four possible applications of the method. The applications derive from field studies supervised or conducted by the writer over the past five years. They include: Research and Development Groups, Production Control Systems, Purchasing Departments, and Management Committees.

708 pages. \$8.85. Mic 55-23

ENGINEERING, MARINE

AN INVESTIGATION OF THE FORCE AND MOMENT BETWEEN TWO SHIPS IN TANDEM

(Publication No. 10,727)

Francis Masao Kobayashi, Sc.D.
University of Notre Dame, 1953

A ship following in the wake of another ship of comparable size experiences a change in hydrodynamic force and moment due to the turbulence and waves generated by the leading ship. This paper is an extension of the work done by T. H. Havelock on this problem. For two identical wall-sided ships of finite draft moving in tandem with steady velocity, the force and moment due to waves, experienced by the trailing ship, are derived. The ships are replaced by a distribution of sources and sinks and the derivation of a velocity potential, for the sources and sinks, satisfying conditions at the free surface, surface of the hull, and at infinity is shown. The hydrodynamic force and moment due to waves are derived

by using the velocity potential in Lagally's theorem and employing the usual assumptions used in the theory of wave resistance. The force is taken in two components, horizontal and vertical, and the moment is found about a transverse axis through the center of mass of the trailing ship. The various hydrodynamic force and moment components are classified into three parts; the force and moment as if the ship is moving alone on a calm sea, the force and moment due to mutual interaction which may be classed as due to local interference, and the additional force and moment due to wave interference acting on the trailing ship.

Procedures applicable to the evaluation of all the integrals involved are indicated and the results for the force components and significant moment components are listed. The results are in a form suitable for the substitution of numerical values. The significant force and moment components are given in terms of modified Bessel functions of the second kind of order zero and one, and also a function denoted by $Q()$ which involves the gamma function.

Since the numerical calculations covering a range of values for the parameters are very lengthy, only a sample calculation is given. This sample calculation serves to indicate that the significant force and moment components can become of the same order of magnitude as the wave resistance of the trailing ship when alone and thus may become very important. The full description of the various components with respect to several parameters is left for discussion at another time.

136 pages. \$1.70. Mic 55-24

section and the theoretical boundary stress for a straight beam of equal cross section) is related to the section ratio. This relation is

$$\text{Inner boundary} - K = -7.853 R_a^2 + 20.75 R_a - 12.40$$

$$\text{Outer boundary} - K = -2.097 R_a^2 + 5.96 R_a - 3.46$$

The distribution of the stress around the perimeter of the curved beam is shown in charts for the models tested. The stress ratio k , the ratio of the tangential boundary stress at any point to that at the central section, is thus determined. By plotting this ratio against the eccentricity ratio H/h for various angles θ from the centerline of symmetry, curves are obtained which may be used for design purposes. From these curves formulas covering θ from 0 to 90° and H/h from 0 to 0.325 have been derived and likewise may be used in design. The actual stress at any point on the curved boundary within the limitations given then becomes $\sigma_\theta = Kk \frac{Mc}{I}$.

As a by-product, additional data on the behaviour of Kriston, the photoelastic material used for the models, were obtained.

98 pages. \$1.23. Mic A 55-316

AN ANALYSIS OF THE LUMBER PLANING PROCESS

(Publication No. 10,769)

Peter Koch, Ph.D.
University of Washington, 1954

This investigation pertains to the peripheral-milling process of planing lumber. The experimentation determined some relationships between cutter-head-horsepower and various combinations of specimen, cutterhead and feed factors. Secondary consideration is given to the quality of surface obtained. The cutterhead variables as well as the feeds and speeds employed were in the range of those commonly used in industry, i.e., feed speeds to 600 FPM with cutterheads ranging up to 9-3/8-inch cutting-circle diameter and carrying up to 12 knives.

The cutterhead power requirement was measured with a recording wattmeter and interpreted through the analysis of several hundred photographs of the forming chip which were taken simultaneously with the power readings. The photographs were taken with an exposure time of one micro-second and are presented with detail in full scale. From a total of over four hundred, approximately 80 of the most meaningful photographs are presented in conjunction with the power curves.

The data were accumulated, and are presented with discussion, in a series of multi-factor experiments. The factors tested include the following: diameter of cutting-circle, number of knives, rake angle, clearance angle, width of joint, knife extension, cutterhead type (gib type), angle between rotational axis of cutterhead and direction of feed, feed speed, depth of cut, direction of cutterhead rotation with

ENGINEERING, MECHANICAL

STRESSES IN CURVED BEAMS HAVING ECCENTRIC BOUNDARIES

(Publication No. 10,695)

Frederick James Bogardus, Ph.D.
Purdue University, 1954

Major Professor: E. Stanley Ault

A photoelastic study of curved beams having eccentric boundaries is reported in this thesis. Only beams having a rectangular cross section, a larger outer radius than inner radius of curvature and maximum depth at the central section are considered. The investigation also concentrates on beams having a section ratio $R_a = \frac{R_o + R_i}{h + R_i}$ between 1.2 and 1.5, a region covering proportions frequently found in the design of lifting hooks, machine frames and other members. This section ratio reflects the variations in proportions of the beams tested since h is the beam depth at the central section and R_o and R_i are the outer and inner radii of curvature respectively.

In the region tested, the stress factor, K (the ratio between the tangential boundary stress at the central

relation to direction of feed, specific gravity, grain type, and moisture content.

The horsepower requirement of the cutterhead was found to increase with increasing cutting-circle diameter, the percentage of the increase depending on stock moisture content among other things. With deep cuts and feed speeds resulting in over 0.25-inch feed per knife, the number of knives employed makes little difference in cutterhead horsepower demand. At lower feeds and speeds varying degrees of proportionality exist between power requirement and number of knives cutting.

The tests indicate that horsepower demand rises sharply with decreased rake angle and that cutterhead horsepower is inversely related to clearance angle. The power demand increases with increased width of joint, the effect being accentuated with increased depth of cut. Up to a certain critical value, the knife extension beyond the face of the gib is inversely related to the power demand. Conformation of the gib is shown to have a pronounced effect on power demand. A slight horsepower advantage was noted when the rotational axis of the cutterhead was slewed to make a 70-degree angle with the direction of feed as compared to the conventional 90-degree angle.

At low feed speeds a linear relationship exists between feed speed and horsepower demand but as the feed speed increases beyond 500 FPM horsepower demand rapidly increases in a curvilinear fashion. Increased depth of cut results in increased power demand with many interactions affecting the relationship.

Up-milling as conventionally practiced requires less cutterhead horsepower than down-milling under the test conditions. In general cutterhead power demand increases with the specific gravity of the wood being machined. Edge grain stock requires more power than does flat grain stock. At rake angles of from plus 40 degrees green stock takes significantly more power than does dry stock. At rake angles of zero degrees and minus 5 degrees green stock requires less power than dry stock.

355 pages. \$4.44. Mic 55-25

INVESTIGATION OF TRANSLATORY FLUID WHIRL OF VERTICAL SHAFTS

(Publication No. 10,803)

Beno Sternlicht, Ph.D.
Columbia University, 1954

The problem of translatory fluid whirl has been investigated for a rigid shaft in a vertical position running in rigidly supported bearings. This investigation consists of a bearing analysis based on the principals of mechanics and hydrodynamics, with an experimental verification for two types of bearings.

If the radial component of the hydrodynamic film force in a vertical journal bearing with a rigid shaft is plotted against eccentricity ratio, the analysis

shows that the stability of the bearing is a function of the slope of this curve at the origin and also a function of the mass of shaft and rotor.

If the slope of the curve at the origin is zero, the analysis predicts instability at all operating speeds.

Equipment was designed and instrumental for the determination of the threshold whirl frequency.

The ungrooved journal bearing operating with a vertical shaft was observed to whirl at all tested speeds, which is in agreement with theory.

Equipment was also built to measure attitude and eccentricity in journal bearings. The method used is new; the principle is to measure the motion between a rigidly supported shaft and a floating bearing. Three types of instruments were used to measure the motion: mechanical, pneumatic, and optical. Results indicate that there was very good correlation between the three methods employed. The pneumatic system appeared to be most reliable and it is considered most satisfactory.

For additional verification of the analysis, a curve of the radial force component of the hydrodynamic film for the ungrooved journal bearing was obtained experimentally, using the equipment described above, in terms of the minimum film-thickness. This curve was drawn through the mean positions, of the experimental points. The slope was found to be zero at the origin. This was in accord with the analysis for the ungrooved journal bearing. It was considered to constitute an effective verification of the analysis.

To get still further verification of the analysis, it was necessary to design a modified bearing. The radial component of the hydrodynamic film force of this bearing had a slope which was different from zero at the origin. Known hydrodynamic theory was used to design such a bearing.

Three analytical methods were employed to the determination of the K_2 factor from which the threshold whirl frequency was determined:

- Based on Dennison's data, the whirl frequency was calculated to be 2260 rpm.
- Based on Needs' work, the threshold whirl frequency was calculated to be 2890 rpm.
- Using Southwell's relaxation method, the whirl frequency was calculated to be 2920 rpm.

Method (a) and (b) used Wilcock's eccentricity locus, for the resolution of the radial and tangential component of force.

The threshold whirl frequency was measured experimentally for this bearing when operating in a vertical position and was found to be about 2700 rpm. Again with a view toward obtaining additional verification of the analysis, a curve of the radial force for the modified bearing was obtained experimentally. From this curve, the slope at the origin was determined. Using the value of the slope so obtained, the analysis was used to predict the threshold whirl frequency.

Based on a graphical method for evaluation of the slope, the whirl frequency was predicted to be 2600 rpm, whereas, using an algebraic equation to evaluate the slope, the whirl frequency was

calculated to be 2440 rpm. This was an additional method for checking the three theoretical results with the experimentally measured results. The predicted value was found to be within 17 per cent of the measured value.

The two cases investigated indicated that the analysis can be used successfully to predict the threshold whirl frequency of rigid journal bearings and shafts operating in a vertical position. It seems reasonable to assume that this analysis can be used for other types of journal bearings operating under similar conditions.

Procedure Followed

- 1) The literature associated with the problem was studied.
- 2) An analysis for bearings of finite length was developed by modification of a theory proposed by Dr. H. Poritsky for infinite-length bearings.
- 3) Apparatus was designed and built to measure the threshold whirl frequency of a rigidly-supported bearing operating on a stiff, vertical shaft.
- 4) Two types of bearings were tested in this apparatus. The first was an ungrooved journal bearing while the second was a specially modified bearing.
- 5) In order to further compare the analytic prediction of the threshold whirl frequency with the experimentally-measured frequency, it was necessary to determine the eccentricity locus experimentally. This is a plot of relative position of the shaft center with respect to the bearing center as the operating conditions of load, speed, and lubricant viscosity are varied.
- 6) A three way comparison was made of the threshold whirl frequency predicted by the analysis, (step 2, above) the measured frequency, (step 3, above) and the value determined experimentally from the eccentricity locus (step 5, above).

397 pages. \$3.71. Mic 55-26

ENGINEERING, METALLURGY

STUDY OF THE KINETICS OF ORDER-DISORDER TRANSFORMATIONS

(Publication No. 10,720)

Clifford Scott Barker, Ph.D.
University of Notre Dame, 1954

The kinetics of ordering of copper-gold (CuAu) was found to consist of two stages whose rates are higher the higher the disordering temperature. The mechanism of ordering is explained as nucleation and growth. Stage I consists of the formation and growth of small ordered nuclei in the disordered matrix and Stage II represents the growth of some nuclei, after impingement, at the expense of others. Activation energies of both stages were determined for disordering temperatures of 440 and 600° C. Calculation of the energy of vacancy formation and that of vacancy migration at 250° C gave equal values (14.5 kcal/mol). The existence of an ordered 10 cell orthorhombic structure (CuAu II), present in the temperature range 375-410° C, was confirmed. The rate of ordering at these temperatures was found to be slower than at temperatures below 375° C where the ordered base-centered tetragonal structure (CuAu I) is found. It was also concluded that the CuAu II structure does not originate from the CuAu I structure. In addition, the temperature of transformation of the CuAu II structure was found to be independent of (1) the disordering temperature, (2) the particle size (down to 10 microns diameter), and (3) stresses due to ordering along the wire diameter.

132 pages. \$1.65. Mic 55-27

GEOGRAPHY

WATER USE RELATIONSHIPS IN THE GENESEE VALLEY AND WESTERN LAKE ONTARIO BASIN

(Publication No. 10,406)

Erich Fred Bordne, Ph.D.
Syracuse University, 1954

Advisor: Clyde P. Patton

This study is concerned with water use in a portion of western New York during a specific period, the 1948 - 1949 water year. Specifically, it has as its purpose the determination of domestic, industrial, animal, and vegetative water use, and the areas of such use, in order to ascertain the role of each in

the water balance equation of this area of north-eastern United States.

The comprehension of differences in water use from place to place is based upon an understanding of many complex relationships between the terrain, man, and the atmosphere. The function of the terrain factors, i.e. of the soil and the underlying rock, in a regional water study has to be evaluated before the water use differences from place to place can be measured. It is only after such preliminary investigation and clarification that this study could proceed.

The climatic picture during the 1948 - 1949 water year was such that this particular year was a fairly representative one, although slightly drier than normal. Climate was a later key to both the potential and actual water use by vegetation. For example, the slightly higher than normal temperature during the water year meant that potential vegetative water use

was highest along the northern third of the area where temperatures were also higher. Actual water use was quite different, in that areas of high vegetative water use values closely approximated the areas of precipitation for the 1948 - 1949 water year. This was highest in the plateau sector as mentioned above.

Domestic, industrial, and animal water use was found to be very small part of the yearly water use of the entire region. When this use was converted to the equivalent inches of precipitation, the areas of highest use were along the canal, in the central Genesee Valley, and the Wellsville area. The difference between potential and actual water use for these purposes was highest along the canal, along with a greater use of water by municipalities and industries. Increases in both domestic and industrial water use were slightly below the national average increase over the years.

When computed by three widely used methods, the actual vegetative water use differences from place to place were of approximately the same magnitude. By comparing the potential and actual vegetative water use values it is possible to determine that the need for additional water would be greater in the area bordering the lake, and least in the plateau.

Water use in all parts of the area showed a marked increase in the summer months. The greatest increase for the area in general was in vegetative water use. Domestic and industrial uses showed the greatest increase in the central and northern parts of the area. This was especially pronounced in areas with food processing establishments.

Additional modifications may be possible in the future, when more is known about evapotranspiration - plant - root - water relationships. Until such a time, it is hoped that this study has contributed to the knowledge about water use in western New York and also pointed out problems and methods of examining water use in other sectors of northeastern United States. It would be of value to see similar methods applied in a different area.

257 pages. \$3.21. Mic 55-28

diameter. But it cannot distinguish either the size or the shape of a symbol that is smaller than approximately 1/300 of an inch in diameter. Hence the eye will distort both the area relationships and the values of the dots that press upon the threshold of vision. If the patterns of small symbols are to be quantitatively measured some means must be found whereby the dot-area relationships can be interpreted mechanically.

The use of the recording densitometer is a basic solution to the problem. This instrument, the equivalent of a sensitive photoelectric cell, calculates density by measuring the ability of the dots to influence the intensity of a collimated beam of light of a known incident value. The results are given as a profile of density so that the discontinuous patterns of dots are translated into line continuities.

The densitometer makes several unique contributions to dot map analysis. The measurement of density is entirely divorced from political or statistical enclosures. The instrument can see more detail than the eye can perceive so that many thousands of very small dots can be used on the map. The profiles of density can be mechanically controlled to yield any degree of generalization required by a specific cartographic problem. And the profiles can be converted to isopleth maps over a broad range of scales. The density of population will be known not only on the lines but also in the intervals between isopleths.

In order to explore the potential use of the densitometer in population geography it is necessary to examine the whole concept of the population dot map. A critical inspection reveals several pertinent points. First, rural and urban areas can be mapped at the same scale and with the same symbol, using as low as three people per dot. Second, the same degree of generalization incorporated into a map with a scale of 1:31,680 can be preserved at a scale of 1:500,000. Third, available statistical methods for locating the dots have little to contribute to the construction of the map. And fourth, if minute detail is to be preserved, it is essential to correlate census statistics with the topographic and Bureau of Public Works General Highway maps.

All major hypotheses regarding the construction of the dot map and the application of the densitometer to map interpretation were tested in this paper against a series of dot maps of Brutus Town, Cayuga County, New York. The most promising techniques were then projected to Cayuga County itself. The results demonstrate that dot maps can reveal heretofore unsuspected detail and that the densitometer can effectively measure the density of the dot patterns everywhere on the map.

223 pages. \$2.79. Mic A 55-317

METHODS OF MAPPING POPULATION DISTRIBUTION WITH DOTS AND DENSITOMETER-DERIVED ISOPLLETHS

(Publication No. 10,407)

William Glenn Byron, Ph.D.
Syracuse University, 1954

The representation of people on maps has involved the use of many different kinds of cartographic symbols. Of all possible systems the dot method appears to have the most promise. Yet the use of dots involves procedures that are deceptively complex.

If only the eye had the physiological capacity to distinguish the densities of dot patterns in their true quantitative aspect there would be no problem. But the eye, like all sensory perceptors, does not react arithmetically to differences in stimulation. The eye can see symbols as small as 1/1000 of an inch in

GEOPOLITICS OF THE COLONY AND STATE OF CONNECTICUT

(Publication No. 10,796)

Henry Natunewicz, Ph.D.
Columbia University, 1954

This work is a politico-geographic analysis of the colony and state of Connecticut from its inception to the present. The principles and concomitant problems of legislative representation in the state's General Assembly constitute the central theme of study in this particular investigation. The main issue here revolves about the dilemma of unequal representation in the lower house. For example, Hartford, a city of over 180,000 people, and Union, a town of about 200 inhabitants, both have two representatives each in the lower chamber of the legislature. This situation is neither equal or equitable. It brings out some alternatives in regard to revision of the bases for apportionment. The demographic and political bases of representation have apparently monopolized the criteria, to the exclusion of the all-important geographic factor. However, it has been shown that geographic elements have played a vital role in the process of ecological and human interaction which resulted in the evolution of Connecticut's polity and sovereignty.

The study relates modern political organization in state government to geopolitical theory and practice. This project has narrowed the area of politico-geographic inquiry to the more concentrated field of provincial application, whereas formerly geopolitics has been concerned exclusively with international and national frames of reference. The author has attempted to portray a parochial and provincial picture of dynamic geopolitics in the process of formulating statehood. His focus has been centered on "grass roots" geopolitics and their human concomitants.

Efforts at ameliorating governmental anomalies precipitated by the anachronistic and anachoristic system of legislative apportionment which exists in Connecticut have been traced and evaluated in the light of modern social and human needs. The question of legalistic reform has been pitted against the realistic need for preparation for survival in the event of a global military conflict. Educational implications of this work are suggested by its proposed use as a textbook in courses covering regional political geography, stemming from a new orientation to political problems through geopolitical "eyeglasses." This novel synthesis should be of considerable value to both geographers and political scientists.

233 pages. \$2.91. MicA 55-318

GEOLOGY

**REGIONAL DEVONIAN STRATIGRAPHY
IN CENTRAL AND WESTERN UTAH**

(Publication No. 10,760)

James Elwood Brooks, Ph.D.
University of Washington, 1954

A study of regional Devonian relationships throughout central and western Utah and adjacent areas of Idaho, Wyoming and Nevada leads to unification and simplification of the existing diverse rock unit nomenclature and the determination of the valid limits of applicability of established formation names. Regional relationships of the Devonian stratigraphy are examined by means of isopach and lithofacies maps.

For purposes of this study the Devonian Sequence is arbitrarily divided into three operational lithic intervals which are established on the basis of criteria recognizable throughout the region. Each interval is examined in terms of sediment distribution and depositional environment. Tectonic environment is inferred from thickness and gross lithologic aspect. The three lithic intervals are, in ascending order, the Sevy, the Jefferson and the Three Forks. The Sevy represents predominantly restricted basinal conditions with the ensuing deposition of primary dolomites. The Jefferson

sediments are principally normal marine carbonates and indicate sedimentation in basins and on unstable shelves under essentially open ocean conditions. The Three Forks is composed of calcareous shales and, on the stable shelf, of normal marine limestones. The increased clastic content of the Three Forks interval is interpreted as indicative of increased positive tectonism in the source areas. Finally, the three intervals are integrated in an isopach-lithofacies map of the total Devonian Sequence. This map, with its supporting data, indicates that the deposition of the Devonian Sequence in the area of study was controlled by two tectonic environments — the stable shelf to the east and south and, peripheral to this, on the west and north, the miogeosyncline. Several subsidiary basins and swells are recognized within the miogeosyncline. The record demonstrates the existence of a complete Devonian section in at least one of these basins and evidence is ample to indicate the transgression of Devonian seas eastward and northward from this basin into the remainder of the miogeosynclinal area and, ultimately, onto the stable shelf.

214 pages. \$2.68. MicA 55-319

THE GEOMORPHOLOGY OF THE
TIOUGHNIOGA RIVER OF CENTRAL
NEW YORK

(Publication No. 10,409)

Forrest Durham, Ph.D.
Syracuse University, 1954

The Tioughnioga River drainage basin, although representing a relatively small part of the Allegheny Plateau in central New York, nevertheless portrays salient features characteristic in the development of the northern edge of that plateau.

It is the purpose of this paper to develop in a comprehensive manner the physiography of a region which has been hitherto attacked only in segment by relatively few geologists.

The Tioughnioga River developed as a consequent stream on the Schooley Peneplain. This erosion surface had truncated south dipping rock strata without regard to differences in rock resistance.

With uplift during the Tertiary, and with the development of subsequent streams in the zones of non-resistant rock, cuestas were formed with steep north facing escarpments. The Onondaga Escarpment in the area of the Tioughnioga was the most pronounced, however the Tully limestone and Sherburne sandstone developed a cuesta which can be viewed today from Tully Center to Fabius. The resistant Portage sandstones gave rise to the Portage Escarpment which is shown in part by the steep hills to the south of Cortland.

Obsequent streams on the escarpments developed funnel shaped valleys extending into the plateau. By headward erosion, the obsequent streams pushed the divide farther and farther to the south. Well logs and seismic data show that the pre-glacial divide in the Onondaga - Cortland Valley did not push as far south as had been estimated by previous writers. It is demonstrated to be at or near Tully Center, which is also the location of the present divide. The pre-glacial divide in Butternut Creek Valley, and also in Otisco Valley was approximately at the site of the present divide.

The effect of glaciation was to modify former topography, particularly in the valleys. The uplands were only slightly or not at all modified.

The valley-head moraines in the Tioughnioga area owe their existence to structure. They are apparently "plastered" against the pre-glacial divides, lacking sufficient force to over-ride them. The fill in the valley beyond the Tully Moraine is much thinner than previously assumed, in as much as the deep Onondaga Valley is not continuous beyond the moraine.

Until Pleistocene time, the Tioughnioga River was tributary to the Cayugan River. The glacier deepened the col between the Tioughnioga and Susquehanna drainage five miles south-east of Cortland. Kamic gravels deposited in the valley at South Cortland and the Factory Brook Valley fan, caused the west branch of the Tioughnioga to flow through the col at Cort-

land to join the east branch. From this point the river flowed through the deepened gap into Susquehanna drainage. 101 pages. \$1.26. MicA 55-320

SELECTED ASPECTS OF THE LEACHED
OUTCROP PROBLEM

(Publication No. 10,792)

William Crowley Kelly, Ph.D.
Columbia University, 1954

The reconstruction of lead-zinc ores from their leached outcrops is a problem fundamental to the discovery of new deposits in areas where climate is favorable to the development of gossan. Several approaches to this problem were selected and studied in the field and laboratory.

X-ray studies and differential thermal analyses of 159 gossan "limonites" (transported and indigenous) indicate that goethite is the predominant ferric oxide monohydrate in leached lead-zinc outcrops. Lepidocrocite is either extremely rare or completely absent. The predominance of goethite can be explained in terms of the chemical conditions under which the mineral has been synthesized in the laboratory. Rather than revealing new outcrop criteria of use in the search for ores, the application of thermal analysis to gossan "limonites" showed that this technique is not, as formerly thought, a reliable means for identification of the hydrous ferric oxide minerals. Thermal curves closely resembling published standards for (a) goethite, (b) lepidocrocite, and (c) goethite-lepidocrocite mixtures may be produced by goethite alone depending on the degree of crystallization in the materials tested.

The quantitative relationship between gossan porosity and leached sulfide volumes was also investigated. A technique involving the application of microscopic counts to the measurement of cavities after sulfides was developed which permits direct estimates of the volume of sulfides originally contained by a given gossan sample. This technique is applicable only to outcrops in which voids after sulfides can be clearly distinguished from non-sulfide cavities.

Even in cases of "ideal gossans" in which there appears to be excellent cavity reproduction of former sulfides, gossan porosity determinations made by standard weighing procedures are of little value because (1) the quantity of pores in the original un-oxidized ore is unknown from data available at the surface, (2) leaching of non-sulfide (gangue) minerals may increase porosity in the outcrop, and (3) gossan pores may be coated or even sealed by limonite, silica, gypsum, or the metal oxy-salts.

Colors of iron precipitates in leached lead-zinc outcrops are of very definite local value as criteria of specific primary sulfides. However, no one gossan color or color pattern is universally diagnostic of the former presence of pyrite, galena, or sphalerite. Factors other than original sulfides which may affect

the colors seen in a leached outcrop are manifold and in view of this the lack of general color criteria is understandable.

The application of boxwork structures as surface guides to ore is reviewed and a number of "non-sulfide boxworks" observed in the field are described. The latter are sufficiently similar to true sulfide derivatives to cause some confusion regarding the nature of the original materials before oxidation; hence, their recognition at the surface is a matter of practical importance. It is also important that a distinction be made between hypogene and supergene "boxwork siderites." The supergene boxworks originate and occur in limestones beneath oxidizing ore bodies and, if they are exposed at the surface by erosion, they serve as guides to the removal of overlying ore rather than to the existence of workable ore below the outcrops. Hypogene boxworks do not convey the same meaning since they cannot be expected to bear any definite spacial relationship to ore.

Mining areas studied in various parts of Mexico, New Mexico, Utah, Tennessee, and Vermont are described in a separate section at the end of the present paper. Emphasis is placed on features related to oxidation of the lead-zinc ores and the development of leached surface cappings.

155 pages. \$1.94. Mic 55-29

**A SURVEY OF GROUND WATER
RESOURCES IN OAKLAND
COUNTY, MICHIGAN**

(Publication No. 10,088)

Andrew John Mozola, Ph.D.
Syracuse University, 1954

Ground water recovery in Oakland County is primarily from Pleistocene and Recent deposits, the underlying Paleozoics contributing but negligible amounts to the total withdrawal for reasons of quality and yield. In 1950, a minimum of 30 million gallons was recovered daily, principally in the southeastern-most nine townships, where 84 percent of the total county population is settled.

Ground water percolation, as revealed by the piezometric map, is generally southeastward except in the extreme northwest portion of the county. Areas of heavy pumpage, shown as depressions in the piezometric surface, occur in the Pontiac, Birmingham, and Berkley-Royal Oak regions. The recent map when compared to one dated 1930 likewise reveals a general decline in static level for the glacial lake plain area, the decline being 75 feet before the southeasterly limit of the plain is reached.

Within the county, four hydrologic units are evident, the glacial mantle containing three and the bedrock comprising but one. Subdivision into distinct units is based on such factors as (a) occurrence of water in consolidated or unconsolidated sediments, (b) occurrence as to conditions of confinement or unconfinement, (c) quality of water and, (d) ease of its

recovery. The first unit, considered as a single entity because of insufficient data, consists of sedimentary strata in which water is generally under confinement and highly mineralized. Degree of mineralization increases with depth, the water sample analyses revealing a range in total hardness from 270 to 45,945 ppm., with non-carbonate hardness greatly in excess of carbonate. Disregarding quality, the quantity in most instances is insufficient for development of large supplies, owing to the generally low permeability of the bedrock. Reported yields range from 1.5 to 100 gpm.

The second hydrologic unit, consisting of interlobate outwash deposited between two morainic belts, is the principal intake area. With minor exceptions, the water is unconfined, as evidenced by the harmony of inland lake-levels with levels in wells. This unit is most favorable with regard to ground water potential, and large supplies are possible without intensive exploration and development. Moraines and till plains, composed of unassorted drift, but containing sand-gravel horizons of various magnitudes, constitute the third unit. Water from these horizons is normally artesian, as indicated by the disharmony of water levels between inland lakes and adjacent wells. Moderate to large supplies are possible, the latter requiring some exploratory drilling. The fourth unit is the glacial lake plain, predominantly waterlaid till veneered with sediments of lacustrine origin. Water is recovered from sands and gravels interbedded with the waterlaid till, or else associated with buried rock valleys. Water is artesian; unconfined water is restricted in occurrence to surface beaches, bars, deltas and river terraces associated with the last ice recession. Large supplies are difficult to obtain without extensive exploration and development.

Except for iron, the quality of water from unconsolidated sediments is satisfactory for most domestic uses. Total hardness, predominantly carbonate, averages 298 ppm. for the outwash, 314 ppm. for the moraines and till plains, and 238 ppm. for the lake plain. Natural gas and salt water, by natural and induced infiltration from the underlying bedrock, may impair the quality of water in the lake plain. Gas wells and water wells with "gas shows" generally occur in drift deposited directly over the Antrim shale.

This study is primarily geologic in scope, and results obtained are thus qualitative. It is evident that further hydrologic studies are necessary to determine quantitative values for percolation, infiltration and safe recovery, and the feasibility of utilizing artificial ground water recharge methods in the critical areas of the county.

366 pages. \$4.58. MicA 55-321

**DELTAIC PROCESSES IN CUBITS GAP
AREA PLAQUEMINES PARISH, LOUISIANA**

(Publication No. 10,817)

Frank A. Weller, Ph.D.
Louisiana State University, 1955

About one hundred years ago, the Mississippi River near its mouth broke through the left bank and poured vast quantities of water and sediment into a bay which formed an arm of the Gulf of Mexico. This breakthrough is called Cubits Gap Crevasse. At the time, the shoreline was only a few hundred feet from the river bank. As the bay began to fill with sediment, a network of channels developed in the newly growing land mass. Each channel or pass had to cut its way through these deltaic deposits in order to obtain an avenue by which it could transport more sediment to the retreating Gulf. Where the turbid river water met the Gulf, sediment was deposited as a bar across the mouth of each pass.

The land mass enlarged as each channel grew seaward by eroding the upstream side of its bar and depositing on the downstream or Gulf side. Then, as now, a pass shoaled as the water flowed up and over the bar. Frequently a channel would split at its mouth to form two passes, each of which, in turn, eventually bifurcated again. Some of the passes

rejoined to form one channel. The over-all effect was a braided network of channels.

Thus the passes of Cubits Gap have built the shoreline some twelve miles seaward of its original position. At the same time, many of the earlier-formed passes have "silted up" and been abandoned. Others have changed from the wide shallow streams over the bars to deep narrow channels upstream.

Maps made by the Federal Government and aerial photographs make it easy to illustrate the history of Cubits Gap Area since the early part of the 19th century. Since many of the present channels are no larger than ordinary rivers, it has been possible for the writer to observe and survey certain bar and channel features. Field work has yielded data and observations which, coupled with an exhaustive coverage of geologic and engineering publications, may explain how this part of the delta evolved.

The writer has also had field experience on other stretches of the Mississippi River, especially near Vicksburg, Mississippi. This has made it possible to make a general comparison between the upper river and the delta.

It is hoped that the principles herein developed can be applied any place where water flows through alluvium of its own deposition.

140 pages. \$1.75. MicA 55-322

HISTORY

HISTORY, GENERAL

**THE EFFECT OF THE DECLINE OF
THE PURITAN OLIGARCHY UPON THE
SCHOOLS OF MASSACHUSETTS
BETWEEN 1664 AND 1758**

(Publication No. 10,625)

Homer F. Cunningham, Ph.D.
New York University, 1954

Puritanism should be regarded as a living, changing, vital movement which played an important role in shaping American life. The Puritans established a holy commonwealth of their own in Massachusetts. Gradually however, the oligarchy of ministers lost control over the colony and the character of life in the colony changed. During the decline of the Puritan oligarchy, fundamental changes were concurrently taking place in the schools. The purpose of this thesis is to trace the decline of the oligarchy as well as the changes which were transpiring in the schools and to determine if a casual relation existed between these movements within the Puritan world.

The theology of the oligarchy was basically Calvinistic although there was not an over-dependence upon Calvin's theology. Gradually the theology of the Puritans changed. God was regarded as being less arbitrary and less interested in his own glory; man was no longer considered totally depraved and

sin was less heinous; regeneration became in part dependent upon man's will rather than entirely upon God's sovereign decree.

The Puritan church changed as the years went by. At first only those who made a public confession of faith could join the church. The Half-way Covenant gave a partial membership to baptised children of church members. Stoddardism opened the full rights of church membership to almost anyone who was leading a respectable life.

Although Jonathan Edwards and the Great Awakening engendered a great amount of religious enthusiasm, the fortunes of the oligarchy were not improved because of the stress on personal piety rather than on the political aims of the oligarchy.

After the charter was taken from Massachusetts the political power of the oligarchy was at an end, for the franchise was determined by the holding of property and not by church membership. At the same time Puritan society was evidencing a departure from earlier standards of conduct in a number of areas.

The first motives of Puritan education were religious, for they wanted an educated ministry and a people able to read the Bible for themselves. However, cultural motives were also present. The establishing of Harvard College was evidence of both these motives. Harvard reflected the purpose of the oligarchy until the turn of the century when the liberals seized control.

At first an effort was made to provide education for all children. Massachusetts passed the first of the compulsory education laws. Toward the end of the seventeenth century, however, a lessening of educational interest was evident. Although a later revival of educational interest occurred, colonial education was never again to witness the same high level of purpose which it had first achieved.

A variety of factors were basically affecting the schools. Danger from the Indians and French, interference from the crown, migration of new settlers, economic expansion, decline of the agricultural village and dispersion of the population beyond the influence of the church and school, all played a part in educational trends.

However, the conclusion of this research is that the decline of the oligarchy and the changing character of the schools were both manifestations of the same changing spirit which pervaded the colony. New England was leaving medievalism as represented by Puritanism and was responding to the humanistic rationalism which had already spread through much of Europe.

350 pages. \$4.38. Mic 55-30

HISTORY, ANCIENT

AN HISTORICAL STUDY OF CYRENE FROM THE FALL OF THE BATTIAD MONARCHY TO THE CLOSE OF THE FOURTH CENTURY B. C.

(Publication No. 10,806)

Abraham Aaron Isaac Waisglass, Ph.D.
Columbia University, 1954

Cyrene's prosperity was due not only to her agricultural and other natural resources but also to her advantageous location on the land routes of North Africa and on the Great Circle of Mediterranean communications which facilitated trade with the rest of the Greek world.

The meagre sources for the republican period of Cyrene's history provide only a damaged mosaic rather than a chain of evidence which can be developed into a full picture. The Battiad monarchy was replaced by a democratic government. This must have occurred at the close of the Athenian expedition to Egypt in 454/3, when a number of Athenian survivors returned home by way of Cyrene. Although left to her own resources after the Peace of Callias (450/49), Cyrene remained neutral throughout the Peloponnesian War and seems to have maintained commercial relations with Athens throughout the republican period.

After the fall of the monarchy Cyrene's control of the district was probably shaken temporarily by Barca, but it must have been secure in the fourth century when Cyrene clashed with Carthage. This war closed with the setting of the border at Philae-norum Arae, celebrated in an aetiology, and probably

with an alliance whereby Carthage assisted Cyrene during the Thibronian invasion.

The tradition of an agreement of isopoly between the founders of Cyrene and their metropolis, Thera, must be accepted as genuine. This agreement seems to have been neglected in time but was reconfirmed in the fourth century (SEG IX. #3).

Cyrene made an alliance with Alexander in 332/1, but she did not thereby become a subject state of Alexander's nor a member of the Corinthian League as some scholars have inferred.

Cyrene's assistance to Greece in the famine occasioned by Alexander's campaigns and aggravated by inflation, bad distribution, profiteering and crop failure was in the nature of a free gift of 805,000 medimni of grain (SEG IX. #2).

The republican form of government, at first democratic, seems to have been replaced by an oligarchy which was troubled by intermittent and sometimes successful uprisings by the democratic opposition but continued even after Ophellas' incorporation of the district into the Ptolemaic empire in 322/1. In 321/0 a limited oligarchy was instituted under Ptolemy's control to replace the extreme oligarchy restored in 322/1. In the revision of the constitution (SEG IX. #1) Ptolemy shows a shrewd combination of many existing oligarchical institutions with some democratic ones in order to appease both factions in a recent stasis and to ensure his control as well. Except for an attempt to throw off the Ptolemaic yoke in 313 this settlement remained in effect with Ophellas at the head of the Ptolemaic garrison until he asserted his independence. His career was ended by assassination at the hands of Agathocles at Carthage in 309/8. Cyrene regained her independence briefly, but this was finally brought to an end by Magas in 301/0.

The republican forms of government at Cyrene could have been influenced both by Athenian institutions and by the sixth-century reforms of Demonax, but the extent of these influences can be determined only with the miraculous recovery of Aristotle's lost Constitution of Cyrene or its epitome by Heracleides Lembus. 240 pages. \$3.00. Mic 55-31

HISTORY, MODERN

A HISTORY OF THE CONSTRUCTION OF THE LEDO ROAD BY THE UNITED STATES ARMY CORPS OF ENGINEERS

(Publication No. 10,097)

Ray Leslie Anders, Jr., Ph.D.
University of Missouri, 1954

Supervisor: Harvey A. DeWeerd

One great purpose motivated the creation in March, 1942, of the China - Burma - India Theater

of Operations: to keep Chinese resistance until the defeat of Japan.

The CBI mission involved training and equipment of Chinese troops, aerial defense of eastern Asia, and restoration of the land contact between China and the Allies blocked by Japan's invasion of Burma early in 1942. Officers from the Combat Arms of the U.S. Army would accomplish the training; American airmen would assist in the defense of Free Asia's skies and fly in critical supplies over the mountainous "Hump" from India. Finally, the reopening of a land route to China, the best hope for comprehensive logistical support of China's armies, was to become the responsibility of experienced engineers and troop units trained and equipped by the U.S. Army Corps of Engineers.

The inability of the Allies to reconquer all of Burma (thus restoring the Rangoon - Mandalay - K'un-ming line of communications) left only the alternative of retaking Burma's northern tip and building a road from Ledo (Assam) to a junction with the old Burma Road near the Chinese border. British resources being inadequate, the Americans undertook to drive the enemy from upper Burma with an American-trained Chinese corps and to construct the Ledo Road through this area of mountains and jungles with whatever troops the Corps of Engineers could provide.

The engineers' struggle to make good this commitment went through three phases. The first (December, 1942 - September, 1943) was a veritable time of troubles. With only part of their organizational equipment, the three available battalions succeeded in advancing the Road across the Patkai Mountains, on the Assam - Burma frontier, to a point some fifty miles from Ledo - only to be halted by the monsoon. This climatic phenomenon, lasting annually from April through September, brought landslides, washouts, deterioration of road surfacing, and skyrocketing malaria rates. These difficulties, moreover, were compounded by the low supply priority of the CBI Theater and the consequent infrequency of new shipments of materiel, repair parts, and additional engineer troops to operate and service road-construction equipment.

The Quebec Conference of August, 1943, gave fresh impetus to the Ledo project. Decisions taken there led to a drastic augmentation of troops and equipment allotted to CBI. Thus reinforced, the Ledo engineers resumed their march beyond the Patkais in October, 1943. Behind the advancing Chinese divisions the engineers pushed their road 120 miles (to Mile 180) before the 1944 monsoon began. Progress in this phase, across the more level terrain of the Hukawng Valley, was hampered by diversions of engineers to airfield-construction, combat-engineering, and to several large bridging projects necessitated by the hydrography of the region.

In the last stage, beginning in October, 1944, a force of 16,000 engineers linked up the Ledo and Burma Roads at Mongyu, Burma, in January, 1945. The 300-mile stretch covered in this period for the most part involved repair of the gravelled highway between Myitkyina and Bhamo. The most spectacular accomplishment of this phase was the construction of

a 1,627-foot trestle-and-ponton bridge over the Irrawaddy River.

The opening of this "greatest military highway ever built" by American engineer soldiers broke the Japanese stranglehold on surface routes to China. The efforts of the Hump airline to supply China with essentials was thenceforth supplemented by transport operations on the Ledo Road. The number of trucks in China increased six-fold in the course of 1945, and for the first time in history China fielded armies with adequate artillery and other heavy equipment.

371 pages. \$4.64. MicA 55-323

**UNCLE JOE CANNON, ARCHFOE OF
INSURGENCY; A HISTORY OF THE RISE
AND FALL OF CANNONISM**

(Publication No. 10,725)

William Rea Gwinn, Ph.D.
University of Notre Dame, 1953

This study deals with the long political career of Joseph Gurney Cannon (1836-1926) who served as a Republican Congressman from Danville, Illinois, for forty-six years between 1873 and 1923. Based chiefly on manuscript sources, it concerns particularly three things: Uncle Joe's tenure as Speaker of the House of Representatives from 1903 to 1911 during the administrations of Theodore Roosevelt and William Howard Taft; his system of directing procedures in the House known as "Cannonism;" and his continuing and direct influence on the rules of the House since 1910 when "Cannonism" was modified substantially due to the energies of an Insurgent Republican-Democratic coalition.

The author does not subscribe to Kenneth W. Hechler's view (*Insurgency*, 1940) that the Insurgent victories gave the entire progressive movement an impetus that can never be measured by a studious analysis of legislative procedure within the House of Representatives, for such a view carries with it the implication that the intricate mechanism of the rules within which laws are made is relatively unimportant. Nor does he subscribe to Blair Bolles' (*Tyrant from Illinois*, 1951) sweeping conclusion that in defeating "Cannonism," the Insurgents invited America to begin the creation of the modern welfare state (which would have horrified Cannon), and thus ushered the country politically and intellectually into the twentieth century.

A homely man with a touch of Lincoln about him, Cannon was a gallant, fearless fighter who arrived at the pinnacle of his career, the Speakership, when he was nearing seventy. He strove unceasingly to use the powers of his office to work his party's will. As an arch-conservative, a stand-patter who believed in a high protective tariff as the keystone of Republican policies, Uncle Joe met increasing opposition within the party after 1906. Until then he had been involved in a close working relationship with Theodore Roosevelt, who, suddenly becoming acutely conscious of

"malefactors of great wealth," began to press Congress for drastic reforms. Cannon and his coterie in the House did not share the President's view and did nothing.

In the ensuing struggle during Taft's administration between the Cannonites in the Republican party and the Insurgents trying to be loyal to "my policies," Speaker Cannon's powers were substantially reduced. The Insurgents, led by George W. Norris, received aid and comfort from Champ Clark and the Democrats for this project. The Speaker's right of recognition was weakened by their forcing the addition of a Calendar Wednesday and a Consent Calendar to the Rules of the House so that members would no longer have to hat in hand to the Speaker. The Speaker was deprived of membership on the important Rules Committee and of the right (since 1791) to appoint the standing committees. The creation of a Discharge Calendar, in theory, restricted still further the committees' control over legislation. All this was done in the name of more democratic procedure.

The Insurgents believed they had put an end to dictatorship in the House, but what they really accomplished was the diffusion of responsibility for legislation. The Speaker remains the second most powerful officer concerned with law-making, but because the powers of the office were reduced in Cannon's time and the power and prestige of the President have become greater, modern Speakers hold an office much less consequential than it was in 1910. Cannon has achieved a dubious kind of immortality, for his name is sure to be taken in vain whenever the Rules are debated in the House.

417 pages. \$5.21. Mic 55-32

**THE COMPLEAT POLITICIAN—
THE LIFE OF ROBERT JOHN WALKER**
(Publication No. 10,802)
James Patrick Shenton, Ph.D.
Columbia University, 1954

Robert John Walker was born on July 19, 1801 and died on November 11, 1869. Between those two dates he managed to crowd in enough activity to occupy three ordinary men. But Walker was anything but ordinary. Driven by a compelling ambition that

made of self-advancement an art, he became a consummate politician. Always keenly aware of popular trends, he understood the most sensible path of action to take, although he often allowed self-interest to divert him from paths which if continually pursued would have marked him one of America's great statesmen. As it was, he stood in the forefront of the great politicians of the middle period of 19th Century America.

Born into a family that had numerous political ties throughout his native state of Pennsylvania, he was almost weened on politics. Migrating South to Mississippi in his early twenties, he rapidly advanced first as lawyer and land speculator, then as Senator from Mississippi. In Congress he identified himself with the dominant Jacksonian wing of the Democratic party. His lasting interest in expansion — manifest destiny — led him to espouse the fight for Texas. His success in so doing was soon followed by his amazing success in the Treasury Department during the Polk Administration. Within four years he had committed the United States to the rudiments of free trade, the independent treasury and other economic reforms. He had also helped bring into being the land controversy that heightened sectional strife after the successful conclusion of the Mexican War.

Out of office he devoted his fiery energy to building a trans-continental railroad and other speculative enterprises less praiseworthy in their intention. The election of Buchanan brought him into politics again. His appointment as Governor of the Kansas Territory in 1857 had as its intention the successful termination of that dispute. Its consequence, in fact, was to bring out how completely sectional controversy had disrupted the union. Committing himself firmly to the idea of majority decision, he allowed himself to be diverted from his true path by a private interest which offered lucrative gain.

The Civil War resolved his doubts and firmly committed him to the union. He strove to save his party, the Democratic, from extinction. Simultaneously, he did all in his power to preserve the nation intact, first as an editor, then as a financial agent in Europe and England. His success in the latter instance was spectacular. After the war, he served as an occasional adviser to the Johnson Administration and as a lobbyist for expansion efforts such as the Alaska purchase.

His death in 1869 found him emerging as an elder statesman. But as usual, still mixing politics with self-advancement. 336 pages. \$4.20. Mic 55-33

LANGUAGE AND LITERATURE

LANGUAGE AND LITERATURE, GENERAL

DOMINANT THEMES IN VIRGIL'S GEORGICS

(Publication No. 10,782)

Smith Palmer Bovie, Ph.D.
Columbia University, 1954

The Georgics stands midway between Hesiod's Works and Days and the descriptive poetry of the eighteenth century and unites the tradition by combining realism with felicitous descriptions of nature. My approach to the Georgics in terms of its themes and imagery, based on recent studies of the English literary tradition which have adopted this method, may serve to complement the standard philological approach.

The first part deals with Hesiod's Works and Days. The poetic quality of Hesiod's defense of farming is emphasized and his poem re-examined from the standpoint of unity. The unity of the work makes itself felt within a whole, if somewhat loose, context wherein is included the necessity and legitimacy of labor, the technical requirements of agricultural labor, the picturesque embodiment of labor in simple images of action, and relevant remarks on the respectability of farming.

The second part contains a new translation into English blank verse of Virgil's Georgics. Differing from the recent translation by C. Day Lewis in meter and from that by L.A.S. Jermyn in diction, this translation seeks to place before the reader of the dissertation the whole context of Virgil's poem before any analysis of the parts is conducted.

The third and main section of the dissertation is a discussion of the dominant themes in the Georgics and of the imagery corresponding to these themes. The first chapter stresses the imaginative unity of the work by elucidating Virgil's whole picture of his subject. By drawing attention to the farmer's fourfold mission of (1) perfecting his work (2) transforming the environment (3) regenerating life on earth and (4) persisting in the sustained application of effort in the presence of fluctuating physical and spiritual energy, seen in the imagery of "ascent-descent", Virgil has given a complete imaginative account of his conception of his subject. Incidental themes, such as the quest for peace and the importance of the individual in a huge political structure, are also traced. The discussion in this chapter concludes with a detailed analysis of Virgil's use of the image of "ascent-descent", perhaps most characteristic image of human endeavor. The chapter also contains a review of the structural unity of the poem and comparisons with Hesiod and Lucretius.

The second chapter of the final part discusses six separate images found in the Georgics which form a

characteristic grouping in this work, images of (1) the sea (2) Mars (3) variety (4) limitation (5) cura and (6) amor. The meaning and the relationship of these images within a georgic context further illuminates Virgil's imaginative conception of his subject. The chapter closes with a defense of the unity of the Fourth Book of the Georgics. Under the heading of "regeneration", a guiding image in the discussion, the account of personal sacrifice and heroism expressed in the myth of Orpheus is seen to relate significantly to the rest of the poem and to carry great weight. Finally, the historical setting of the poem is described and the interpretation given that the poem was not only a response to a specific historical commission but a work that has succeeded in evaluating and in giving rich imaginative lustre to a satisfying and rewarding form of human existence.

324 pages. \$4.05. MICA 55-324

LIBER APOLOGETICUS DE OMNI STATU HUMANAE NATURAE

By Thomas Chandler
Edited with an Introduction and Notes

(Publication No. 10,687)

Doris Enright-Clark, Ph.D.
Bryn Mawr College, 1954

My thesis is an edition with Introduction and Notes of the Liber Apologeticus de Omni Statu Humanae Naturae, a dramatic dialogue written, probably for performance by students in a College Hall, by Thomas Chandler (ca. 1418-1490), Warden of Winchester College, 1450, of New College, 1453, and Chancellor of Oxford, 1457-61, 1472-79. The purpose of the edition is twofold: first, to make available to students of English Literature and Medieval Drama the text of this heretofore unpublished play; and to examine carefully the Liber Apologeticus, to study its sources, the influences upon it, and its relation to contemporary dramatic literature.

It is difficult to know into what category to put this play. It combines and lacks features of both the Miracles and the Moralities and possesses some found in neither. It is, in fact, both in content and form transitional. Its aim and purpose is to set forth the scheme of Redemption. However, it does so by utilizing the allegorical personages of the current Moralities instead of the Biblical dramatis personae of the Miracle plays.

It is divided into four acts: the first tells of the Creation and adornment of Man, of God's gift to him of Reason and Sensuality, of his injunction to Man to be guided by Reason, of the conflict between Reason and Sensuality for supremacy, and of the subsequent victory of Sensuality; and the second recounts Man's discussion with God concerning free will; the third

contains the debate of the Four Daughters of God, Mercy, Justice, Truth, and Peace, before the throne of God, as to whether Man should be redeemed; the fourth tells of Man's redemption by Divine Charity and of the coming of Death and Death's Messenger.

Some works, such as the De Anima et Ejus ad suum et ad dei cognitionem et ad veram pietatem institutionem, traditionally attributed to Hugh of St. Victor, St. Bernard's Sermon, In festo Annuntiationis Beatae Mariae Virginis, Peter Comestor's Historia Scholastica, and Peter Lombard's Libri IV Sententiarum, have been noted as sources. However, throughout the Notes, an attempt has been made rather to show many probable than any particular source for a theme, icon, or idea.

The manuscript containing the Liber Apologeticus is now in Trinity College Library, R 14.5 in the College Library. It is of vellum, 10 1/2 inches by 8, ff 1-68 1, 36 lines to a page. It may be dated somewhere between 1457-1461. To illustrate the text of the play there are, in the manuscript, fifteen finely executed grisaille drawings by an unknown but very gifted artist. He is believed by art historians to have been either Flemish or of the Flemish school, although the drawings were undoubtedly done in England.

228 pages. \$2.85. MicA 55-325

BIOGRAPHY IN ITALY DURING THE EARLY RENAISSANCE

(Publication No. 10,789)

Guido Aldo Guarino, Ph.D.
Columbia University, 1954

Biography was one of the most successful and significant literary forms that flourished in Italy during the Renaissance. In the fourteenth and fifteenth centuries the Italians assiduously cultivated this genre, while other peoples of Western Europe paid little or no attention to it. The causes of this interest in biography were many. Chief among these was the self-conscious individualism of the Italians of that period. Their gradually increasing interest in the individual is the most noticeable trend in the development of biography. At first the works of biographers like Petrarch consisted merely in the narration of external events which were intended for the edification of the reader. By the end of the fifteenth century the individual became all-important. The biographer no longer deemed his task to be that of providing edifying examples or models to be emulated by the reader. He watched with awe and admiration those who through their deeds and the expression of their individuality rose from the masses and stood like gods among men. He considered it his duty to preserve for posterity the fame of these men. As a result of the renewed interest in the individual, the ideal of fame gained more and more importance. It swept the Italian cities of the Renaissance, which began to vaunt their glories. Biographical collections were another way of proclaiming the glory of the cities and showing that the modern

Italians were worthy of their Roman ancestors.

The first part of this work deals with the biographical collections of the fourteenth and fifteenth centuries. It shows how at first early humanists like Petrarch and Boccaccio were concerned mainly with antiquity, a world they admired and deemed superior to their own. In chapters three through six the works of Villani, Fazio, Piccolomini and Vespuccio da Bisticci are discussed. They show how interest in the recent past and contemporary things grew as the men of the early Renaissance became conscious of their own achievements, which they compared with those of the ancients. The role of biography in filling the gap left by humanistic histories which did not deal with cultural matters is shown in chapters seven and eight which discuss the works of Sicco Polenton and Bartolomeo Platina.

The second part of this study deals with the numerous monographs of the fourteenth and fifteenth centuries, and discusses the works of Boccaccio, Bruni, Giannozzo Manetti, Ficino, Gian-Francesco Pico della Mirandola, Antonio Manetti, Raimondo da Capua, Alberti, Feo Belcari, Decembrio, Campano and Tegrimi. These are divided into various categories: poets, philosophers, artists, saints, soldiers and rulers. The characteristics peculiar to each category are discussed. The influence of the Greco-Roman tradition as seen in the works of Nepos, Suetonius and Plutarch, and that of mediaeval biography represented by the "vitae sanctorum" and a few authors such as Einhard is shown both in the first and second sections of this study. The differences in the method and outlook of the various biographers are analyzed. Special attention is paid to the growth of a critical approach to history which was to mark the works of most humanists. It is shown that they do not accept the assertions of classical authors as facts without evaluating them. They examine the various conflicting statements of historians and draw their own conclusions. Fanciful genealogies and fantastic events disappeared from most biographies and were replaced by factual accounts of the individual's life and times. Moreover, the individual was seen in his proper perspective, no longer an isolated being living in a vacuum, but a man living in a certain environment and in relation with society.

293 pages. \$3.66. Mic 55-34

THE CHARACTER-WRITERS AND SEVENTEENTH-CENTURY SOCIETY: 1608-1658

(Publication No. 10,412)

Hobart Sidney Jarrett, Ph.D.
Syracuse University, 1954

The "character," one of the most popular literary forms in seventeenth-century England, attracted large numbers of readers and writers alike. Along with

Anglican divines like Joseph Hall, John Earle, and Thomas Fuller, and the Puritan Thomas Adams, there were character-writers who were to achieve no literary distinction in any other endeavor, but who enjoyed drawing the witty, satirical, or didactic sketches which exposed human weakness to ridicule or extolled virtues toward which mankind should strive.

By constructing prototypes which embodied the essential class traits that the authors wished to emphasize, the character-writers used charactery to instruct for social improvement. And since the sketches range from kings to beggars, charactery affords a kind of moral directory for social and professional types.

This study reveals that there is a striking degree of similarity in the conservative social outlook of the character-writers. Maintaining the view that man's purpose is to glorify God and to render service to the commonwealth, the character-writers were against change and sought to preserve traditional patterns. Man, they held, possessed a rational soul or reason which placed him at the mid-point in the chain of being, between God and the angels above and animals and vegetative life below. But since man had been corrupted through original sin, he was obliged to cultivate his reason before he could enjoy a spiritual renaissance; and when he did not allow reason to govern him but followed the dictates of his senses, he became more bestial and vicious and could not fulfill his purpose.

As there is a hierarchy of souls, so there is a definite order in society, the character-writers reasoned. The primate among men is the king, and it is the duty of every subject to obey and love his divinely anointed sovereign. In decreasing rank come the nobility and gentry, the mercantile classes, and the poor. According to the character-writers, these class lines are fixed and man's reason should make him obey the norms of his particular class. For here again, when the individual fails to conform to the established pattern, he tends more and more toward vice.

The character-writers recognized however that appetitive instincts were a part of man's nature and could not be ignored and that as a social being man was prone to imitate men of superior rank. Consequently, the writers urged their fellows to be moderate, teaching that appetites, acts, and beliefs were not in themselves bad but that to cultivate them to excess is bad. And since man does imitate, he must be taught by both precept and example. Correct precepts must be inculcated by fathers, ministers, schoolmasters, and master-craftsmen; but these teachers, as well as the other types which represent the good in society, give their best instruction to mankind by the example of their own lives.

The lesson which the character-writers attempted to instill in their society was therefore that man must elevate his reason to a position of rule. When he does this, he will conform to individual and social norms, choosing moderation in every human endeavor — in religion and politics, in occupational pursuits and economy, and in all human relations. Moderation is therefore synonymous to virtue, and only when man

follows the moderate course can he fulfill his purpose of glorifying God and serving his commonwealth.

215 pages. \$2.69. Mic A 55-326

A TRANSLATION AND EDITION OF
FALAQUERA'S "SEFER HAM-MABAQQESH,"
PART I

(Publication No. 10,794)

Herschel Levine, Ph.D.
Columbia University, 1954

The Seeker by Rabbi Shem Tob ben Joseph Ibn Falaquera bears upon the ethical, philosophic and scientific thought of the Jews of the thirteenth century. The section of the book which is covered in this thesis is written in rhymed prose and draws heavily from the language of the Bible.

After a long introductory poem, in which the author sketches the purpose of the book and the subjects treated in it, the account of Mebaqqesh or the Seeker is related. The Seeker is a young student who investigates all the ways in which men try to gain happiness, hoping thereby to determine for himself the best path in life to pursue.

He visits, in turn, a wealthy man, a warrior and a craftsman and discusses with each the merits of his respective profession. He then encounters a physician to whom he puts twelve questions dealing with problems of medieval medicine. After spending a year of study with the physician, the Seeker exchanges views with a pious man, a grammarian and a poet, respectively. The ensuing dialogues present the author's views on ethics, language and the art of poetry. The section concludes with a lengthy but eloquent prayer to the Lord for wisdom.

The Hebrew section of this thesis is an edition of the text of the Seeker based upon British Museum Manuscript No. 870, to which are appended notes indicating alternate readings to be found in a manuscript of the Jewish Theological Seminary and in the Hague edition of the work, which is the basis of all present printed editions.

The Introduction to this thesis covers the author's biography, his outlook on Judaism and life, and a brief outline of his other works. It presents, also, a summary of the book, a survey of some of its sources, its place in Hebrew literature, and a short description of the Hebrew manuscripts and printed editions of The Seeker.

295 pages. \$3.69. Mic 55-35

MARK TWAIN AS A SATIRIST

(Publication No. 10,737)

John Sutton Tuckey, Ph.D.
University of Notre Dame, 1953

Mark Twain as a Satirist considers the more important works of Mark Twain in their chronological order, focusing upon what is satirized, the aims of the satirist insofar as they can be ascertained, the satiric methods employed and effectiveness of their use, and any discernible progression in Twain's satire. By considering, in a consecutive way, what Mark Twain's satire is attacking and defending, the study attempts to show what is at issue in his works and to contribute to a better understanding of the rather enigmatic figure that is Mark Twain.

The findings are that the works do show a progressive development in what is satirized, in the critical presuppositions underlying the satire, and in the characteristic, prevailing modes of satire employed to express these changing viewpoints:

1. In the early years, various objects are satirized more or less haphazardly, often with little attention to whether or not they really merit censure. Burlesque is the dominant form for this incidental satire. Toward the end of this first period there is evidence of greater seriousness, a more responsible attitude, and an effort to use more refined satiric methods than those of crude burlesque.

2. In the second period, the satire is more definitely directed at various forms of unreason to be observed in human behavior and especially in human institutions. The satire is often marked, however, by an underlying ambivalence. Twain became aware of conflicting standards, either of which might be used as a basis for judgments. Opposed to the standard of duty, of rational conduct, was a standard of happiness that was based upon retreat from reality and dependent upon the maintenance of illusions that reason must seek to destroy. While this development meant that Twain's satire was to be much involved in the expression and attempted solution of a personal problem, it also meant that Twain's writing became polarized, so that nearly everything he wrote became surcharged with the energy exerted in attempting or resisting the closure of the gap that lay between these conflicting values. Contrast is much used in the satire of this ambivalent, questioning period; disproportions and inequalities are thus made evident, while there need not be complete condemnation of either member of the contrast. Each side serves as a standard by which to measure the shortcomings of the other.

3. In the next period, much of the satire is directed at human nature itself. Man is now seen as incapable of thoroughly responsible and reasonable behavior; he and not his institutions are blamed for existing evils. Irony is especially characteristic of this period, when Twain decided he had been trying to reconcile irreconcilables, such as desire and duty, emotion and reason.

4. In the final period, the satire is often directed at cosmic circumstances, now blamed for the human situation for which man himself is not responsible. However, there is much insistence upon man's insig-

nificance. Cosmic irony is characteristic of the more important examples of Mark Twain's later satire, in which blame is shifted from human institutions or human nature to the universe, its creator, and its laws of operation. Despite such a theoretical position, however, Mark Twain in practice continued to censure human actions.

349 pages. \$4.36. Mic 55-36

LANGUAGE AND LITERATURE,
CLASSICALTHE CHURCH FATHERS AND THE
KINGLY OFFICE

(Publication No. 10,743)

Marie Ann Giuriceo, Ph.D.
Cornell University, 1955

Wherever monarchy has been the established form of government in a state, philosophers have discussed the powers, duties, prerogatives, and personal qualifications of the person destined to hold the supreme position of king. It is not strange, therefore, that the Fathers of the Church, living in a period when monarchy was the accepted form of government, incorporated in their writings specific attitudes towards the kingly office. We find that their judgements are not hastily conceived but are based upon a re-evaluation of two traditions of kingship which developed independently of each other, the Graeco-Roman and the Jewish.

The Apologists definitely rejected Hellenistic and Roman ruler-worship as well as any philosophic approach to the kingly office which granted divinity to the emperor, and adhered strictly to Old and New Testament views of kingship. After Christianity became the official religion of the Roman Empire, the Arian heresy arose which involved an appraisal of the kingly office. Eusebius, representing the Arian view, was willing to grant to the emperor as much divinity as he attributed to Christ. This conception of the emperor aroused the bitter opposition of such stalwart Nicenes as St. Athanasius, Lucifer of Cagliari, St. Basil and St. Ambrose. The unrelenting opposition of St. Ambrose finally sounded the death-knell of the Arian appraisal of the office.

Of the heresies and schisms which arose in this early period of Church history none with the exception of the Arian heresy involved an evaluation of the kingly office. Their existence, however, caused many orthodox churchmen to define the function of the king in combatting them. The Fathers found the basis for their dicta in the authority of the Old Testament. If not heresies or schisms, other practical matters account for the attitudes of the Fathers regarding the office.

There were occasions, however, when the Fathers delivered formal addresses before the emperor or in his memory. Since they had received extensive

training in the schools of rhetoric of their day, they followed models for such speeches prescribed by these schools. In these discourses they made extensive use of pagan commonplaces on the kingly office. Apart from these speeches in which we most naturally expect to find the use of pagan topics, we discovered them in St. Augustine's famous portrait of the Christian prince which evolved as a rejection of the traditional ideal of government, in some of St. John's Chrysostom's homilies and letters, and in the epistles of St. Gregory the Great to the emperors. But Christianity made a marked contribution to the literature of kingship by introducing specifically Christian virtues and themes. The key-figure in this development is St. Ambrose, who introduced an imaginative fusion of pagan themes and Christian teachings and who contributed most to the development of a Christian ideal of kingship. In his oration on the death of Theodosius he painted the portrait of the ideal Christian king which was to influence all subsequent portraits. 344 pages. \$4.30. MicA 55-327

LANGUAGE AND LITERATURE, LINGUISTICS

EINE SEMANTISCHE UNTERSUCHUNG DES GOTISCHEN UND ANDERER GERMANISCHER DIALEKTE IM SINNBEZIRK DES VERSTANDES

(Publication No. 10,686)

Celia Z. Elkin, Ph.D.
Bryn Mawr College, 1954

This dissertation is a semantic study of words which designate the idea of wisdom in Gothic as well as in Old-Saxon, in Mercian, Northumbrian and West-saxon, in Icelandic, in Old-High-German, in Greek and in Latin. The dissertation is divided into three parts. The first and second parts introduce all the Gothic expressions treated, together with the Greek words which they translate. Also given are the meanings of the Greek words, an analysis of which we find in Bauer's *Griechisch-Deutsches Wörterbuch*. The first part furthermore contains the reference material, meaning that all the passages in which the word under consideration appears in the Gothic text are excerpted as well as the corresponding passages in the Old-High-German *Tatian*, in the Old-Saxon *Heliand*, in the Old-English versions of the Bible, and in the Icelandic, the Greek and Latin Bibles. By juxtaposing the parallel passages in the different languages an instrument for comparison was provided. It then became possible to draw conclusions with regard to the geographical distribution of the various words and to make statements concerning the use of different phrases in the various languages in order to express the same thought content.

The third part contains the results of the entire investigation. These were arrived at by careful

comparison of the individual expressions as to their distribution and their specific meaning. The formation of the words was given also if this was not sufficiently discussed in the existing manuals. Separate comparisons were carried through for the Gothic, Old-High-German, Old-English and Greek terms. The Latin was not used as a starting point for a separate comparison because it served primarily as a basis for the Old-High-German text which translates literally and almost slavishly from the Latin. A detailed comparison for the Old-Saxon words was not made since extant passages in Old-Saxon are few. In addition the Old-Saxon *Heliand* is a free poetic rendition of the story of the Bible rather than a translation. Icelandic presented a similar problem since a modern version of the Icelandic Bible was introduced. This was advisable because a really good translation of the Bible into Icelandic did not exist to the year 1812.

The following Gothic words were treated in detail: aha, haunei ahins, inahei, ahma, ahmeins, ahmateins; airzei, airziþa, airzeis; bairhrei, bairhts, bairhtaba; dwalipa, dwalawurdei, dwals; f rapi, gafraþjei, frabjamarzeins, samafrapjís, grindafrapjís, unfrapjands, frodei, unfrodei, froþs, unfrods, frodaba; gahugds, hugs; handugei, handugs; niuklahei, niuklahs; gakunds, gakunþs, kunþi, ufkunþi, unkunþi, anakunnains, kunþs, frakunþs, swikunþs, unswikunþs, unkunþs, uskunþs, swikunþaba, unkunnands; lubjaleisei, laiseins, laisareis, witoda-laisareis, laiseigs, unuslaisips, lists, listeigs; gamaudeins, maudeins, ufarmaudei; mitons, gamitons; muns, gamunds, gaminþi, ana-minds, ainamundipa; ragin, ragineis; snutrei, snutrs; sokns, sokareis, unandsoks; talzeins, talzjands, untals; unnuts; þuhtus, hauhþuhts, mikilþuhts, gapagki, andapants; miþwissei, unwiti, witubni, fullawita, unwita, fullawewis, unfauweis, unweis, unwitands.

The end results of this study cannot be summarized or generalized, but are given specifically for each word in the light of its relationship to other words in the same and other languages here considered. However, it may be said that this dissertation shows the influence of Christian concepts on a group of words in a number of Germanic languages.

489 pages. \$6.11. MicA 55-328

LANGUAGE AND LITERATURE, MODERN

THE MOOR OF GRANADA IN SPANISH LITERATURE OF THE EIGHTEENTH AND NINETEENTH CENTURIES

(Publication No. 10,784)

Maria Soledad Carrasco, Ph.D.
Columbia University, 1954

This dissertation is a study on the literary theme of the gallant Moor of Granada, whose importance in

the literature of Spain and wide diffusion in the literatures of other countries are well known. Literary works about Moorish Granada share a tendency to idealize the Moors according to the prevalent tastes and principles of the moment in which they were written, and their subject matter constitutes a cycle of closely related historical, legendary and fictional themes. There are few valuable studies about the Moorish theme in particular periods, but until now no attempt has been made to survey the entire body of literary works dealing with the idealized Moor of Granada. Moreover, important sections in this field, pertaining mainly to Spanish literature after the Golden Age, have received as yet but scant attention. In view of this situation, we have attempted to make a complete study of our theme in Spanish literature of the eighteenth and nineteenth centuries, preceded by a survey of its earlier development.

This survey, based to a considerable extent on our own research, begins with an appraisal of the historical circumstances and literary currents which favored the poetic and picturesque presentation of the Moors of Granada in the Castilian border ballads of the fifteenth century. Subsequently we discuss the Moorish poetry, novel and drama of the Golden Age, which gave well defined traits and a repertory of anecdotic subject matter to the conventional type of the gallant Moor. We have paid particular attention to the development of our theme outside Spain, and have surveyed from the Italian dramatic pieces commemorating the conquest of Granada to the imitators of Chateaubriand and Washington Irving.

Our study of Spanish literature in the eighteenth and nineteenth centuries is divided into two parts. Part One deals with the theme in Spanish neoclassicism and pre-romanticism, while Part Two studies its flourishing in the Romantic Movement and its decadence in the second half of the nineteenth century. Novel, poetry and drama are considered separately in each part.

It has been found that in the eighteenth century, Moorish poetry in Golden Age style flourished abundantly, and that Golden Age comedias de moros y cristianos and their imitations were very popular among the common people. Towards the end of the eighteenth and the beginning of the nineteenth century, the Moorish themes of Granada appeared in a considerable number of cultured poems and tragedies. Frequently these works did not take their subject matter directly from Spanish sources, but borrowed it from the French Hispano-Moorish novels, particularly from Florian's Gonzalve de Cordoue.

The revival of Golden Age themes and styles is very important and varied in the Romantic literature on our theme, although the approach of foreign authors to Moorish Granada continued to be very influential. The synthesis of Golden Age and foreign influence is best represented by the works of Martinez de la Rosa and Zorrilla. In this period, the amount and variety of material pertaining to our theme is remarkable. The Moorish vogue persisted until the end of the century, but it became mostly imitative after the publi-

cation of Zorrilla's Granada in 1852, and it only enjoyed a brief moment of splendor with the Modernists.

437 pages. \$5.46. Mic 55-37

GIAMBATTISTA GELLI: A MORALIST
OF THE RENAISSANCE

(Publication No. 10,786)

Armand L. DeGaetano, Ph.D.
Columbia University, 1954

This thesis presents a comprehensive picture of the life and works of the Florentine artisan Giambattista Gelli (1498-1563), and a reevaluation of Gelli's literary activities, which are studied in the light of their linguistic, philosophical, theological, and social backgrounds.

Part I furnishes biographical information derived from manuscripts of Florentine institutions and from other primary sources, and places Gelli in his social and intellectual environment. It gives critical analyses of Gelli's works, a list of their sixteenth century editions, and the first analysis of the Italian version, attributed to Gelli, of Simone Porzio's De mente humana.

Part II is concerned with the most original aspect of Gelli's writings — those which express his linguistic interests. It maintains that Gelli was neither a humanist nor a philosopher, but a popularizer, who endeavored to propagate knowledge through the vernacular. He was a leader in the emergence of a common prose literature, which helped to expand the use of Italian into areas theretofore dominated by Latin. Part II also includes examinations of the questione della lingua and a brief history of the Florentine Academy.

The philosophical, theological, social, and moral aspects of Gelli's works are studied in Part III. The positive and negative influences of the Florentine neo-Platonists are considered. Gelli's Circe is presented as a critical reevaluation of the Renaissance concept of the dignity of Man, and the position of Giovanni Gentile and other critics who regard the Circe as an affirmation of the dignity of Man is questioned. Although the Circe shows the ultimate triumph of reason over the senses, it is also an attack on Man's depravity, and it stresses the pessimistic view that very few men can be saved. Gelli's psychology, basically Aristotelian, reflects the contemporary tendency to reconcile the doctrines of the Peripatetics with the views of Renaissance neo-Platonists. However, on the question of immortality, Gelli wholly departs from the Platonist position, which affirms immortality, and reveals himself a Fideist like Pomponazzi. A spiritual restlessness is the leading characteristic of Gelli's work. After an extensive analysis of his position on religion, it is concluded that Gelli was definitely sympathetic with the views of the Protestants. The heretofore unanswered question, whether Gelli did or did not recant what he had written in I capricci del bottaio, is answered on the testimony of unpublished documents.

In Part IV Gelli's lectures on the Divine Comedy, and on Petrarch's verses at the Florentine Academy are analyzed. It is maintained that Gelli is the most important sixteenth century commentator on Dante's Commedia. His aesthetic criticism is significant, though his major concern is didactic, because he considered the function of literature to be primarily utilitarian. A history of Gelli's literary fortune in Italy and abroad is included, as well as a bibliography of works by or about Gelli from the seventeenth century to date. The plagiarism of Gelli's Capricci by Francisco Miranda Villaflor has remained a mystery since 1605. It was mentioned by Bartolomeo degli Alberti in his 1605 edition of I capricci. Heretofore all scholars who attempted to locate the alleged plagiarism failed because of an error made by Fontanini in listing Miranda's work; and some suspected that Alberti reported false information. Research for this thesis located Miranda's book, Dialogos de la phantastica philosophia, de los tres en un compuesto, and the thesis demonstrates that it is a deliberate plagiarism of Gelli's Capricci. A detailed analysis of the plagiarism is presented.

420 pages. \$5.25. Mic 55-38

THE WORLD OF FAULKNER'S IMAGINATION

(Publication No. 10,408)

Donald Albyn Dike, Ph.D.
Syracuse University, 1954

By exploring the imaginative possibilities of a restricted situation, Faulkner has created out of Yoknapatawpha County an image of moral life which embodies the conditions of that life. His subject-matter does not reduce to the decaying Old South; it is, rather, forms of experience for which the sense of cultural crisis promotes a special awareness. The County's inhabitants are like celebrants of a mass, internal to the structure of the plenary situation whose meaning they ritually enact; they earn their identities from participating in happenings which are larger than their several motives and insights. Such participation begins as passion and defines itself through role; attitude is socialized as vocation. By performing reciprocally related roles, which mediate between private and public experience, the characters asseverate their stakes in reality, testify to the risks and commitments of being human, and recreate values out of the trammels of the present, the bequests of the past.

Faulkner's traditionalism is not in his opinions but in his sensibility, not in preference for the past but in the sense that the past is inseparable from the present and a condition of the future. In his imagination, history, a mode of time and reminder of death, is one dimension of moral identity. Complemented by an equal conviction of nature, a mode of space and image of anonymous life, this view informs all the mature work. But it is aware of alternative attitudes.

Absalom, Absalom! is about a man who tries to create merely a future, to make history by denying history. This is to assume the absolute efficacy of will, its superiority to any order and freedom from any sanctions. It is to abstract from history a series of solvable problems, to pretend out of reality the power that animates it, to admit no greater evil than temporary failure.

The world of Faulkner's imagination resists such abstractions and destroys such illusions. From it, evil cannot be dismissed. The fall, nature's divestment of innocence, is history's condition. The present inherits responsibility both for and to the past, and on its discharge the future depends. Isaac McCaslin and Bayard Sartoris find that maturity obligates their redemption of paternal sins; Joe Christmas and Charles Bon, more unfortunate, must search for fathers to redeem. All four, the accepted and the rejected, are aware that their commitment is to the human family, that only by figuring in its order can they realize their meaning. The temptation to seek innocence in dissociation from mankind is great, but the responsible among Faulkner's heroes assent to their mortality: their doomed tenure in a world of unrewarding burdens, births and deaths, enigmatic change.

The dimensions of this world are both interdependent and opposed. Through history man stylizes his responses to nature, attempts to cope with a quality from which he is separated and which often seems to threaten his moral identity. In consolidating that identity, he repudiates its condition or tries to appropriate it in his own image. But by so doing he deprives his history of a relation to reality and reduces its categories to illusion. This conflict, the basis for Isaac McCaslin's relinquishments, recurs throughout the fiction and threatens to disintegrate Faulkner's world, as it does the Compson family. Yet equally strong is a centripetal impulse to reunion: of historical man with his natural source, of fathers with their sons, of action with innocence. The love and enduring capacity for sacrifice which are the core of the impulse cannot accomplish a mythical reconciliation but they suffice for the world's continuing atonement.

213 pages. \$2.66. Mic A 55-329

HAWTHORNE'S "CATHOLIC" CRITIQUE

(Publication No. 10,724)

Henry George Fairbanks, Ph.D.
University of Notre Dame, 1954

This is a study of Nathaniel Hawthorne's fundamental philosophy of life as it is revealed in his reflection of, and in his reaction to, four major dislocations of the nineteenth century:

1. the breakdown of religion.
2. the new orientation of man with reference to Nature.
3. the problems of divisive individualism.
4. the disintegration of human personality.

The word "catholic," as used in the title, means "broad," "whole," "complete," as distinguished from "fragmentary," "sectarian," or "specialized." The chapter divisions of the dissertation develop each of the foregoing dislocations as basic cultural schisms: from God, from Nature, from Man, and from Self. Besides general biographical data and pertinent unpublished materials, the entire range of Hawthorne's published works has been utilized in the research.

Both in his life and in his works Hawthorne mirrored the major fragmentations of modern culture. Sometimes he reflected them in his personal problems, especially his sharp sense of isolation from reality and his reiterated feeling of frustration. Sometimes he criticized them consciously in explicit comments upon events of his day, or in fictional representations of them. But, as man or critic, his view of the four dislocations enumerated was consistently, and traditionally, Christian, marked by a sense of wholeness, or balance, largely lost in an age of narrow causes and centrifugal specializations.

The traditionalism and the breadth of Hawthorne's outlook were (a) derived from, and (b) in essential correspondence with, the ancient source of those modern sects and their humanitarian outgrowths which he had found wanting in his experience. This correspondence, in turn, accounts for Hawthorne's sympathy with the spirit of Catholicism which has impressed many and led some to exaggerate its degree or significance.

The radical traditionalism and unique breadth of his views placed Hawthorne in essential rapport with a Catholic philosophy of life, stripped of dogmatic theology. He never became a Catholic. Apparently, he never intended to become one. But his quest for unity amid the growing chaos of modern multiplicity had led him to adopt a stand that was impressively catholic and allied to the position of Catholicism. Not the art of Italy, nor any conscious movement towards religious conversion, but a predisposition to see life as a whole accounts for the sympathy with Catholicism which Hawthorne manifested towards the end of his life.

411 pages. \$5.14. Mic 55-39

THE RELATION OF THE NOTES DE VOYAGE TO SALAMMBÔ AND HERODIAS

(Publication No. 10,689)

Camilla Hoy, Ph.D.
Bryn Mawr College, 1954

A comparison of Flaubert's Notes de voyage to his Salammbô and Hérodias reveals some parallel passages, most of which have already been discussed by critics. Flaubert obviously consulted his journals when he wrote the novel and the short story; yet the amount of material which he borrowed from the journals is small. Still, critics have attributed great importance to the journeys described in the Notes, saying that during those journeys Flaubert found the inspiration for Salammbô and developed his aesthetic

theory, his style, and his powers of observation. These statements raise certain questions: what was Flaubert's aesthetic theory before and after the journeys, what was his style in the Notes, what was his picture of the Orient and how did it change as he traveled. In order to evaluate the parallel passages, I have had to consider them in relation to the total development of Salammbô and Hérodias.

In Flaubert's Oeuvres de jeunesse and Correspondance, he showed that, long before his journeys, he had a well-developed theory of aesthetics, in which he emphasized imagination, saying that material observed in reality can enter art only as it becomes a part of the poet's vision. In these same works there recurs a vision of the Orient; the unhappy poet sees life as a series of scenes in the ancient Orient: thriving cities and beautiful plains, the orgies and battles of men, and finally the death of man and the destruction of all his possessions.

With the hope that a journey to the Orient would contribute to his artistic success, Flaubert himself started around the Mediterranean. But he was bored and disappointed. Only occasionally, before some ancient monument or some landscape, did he feel himself in the presence of the real Orient. At these moments, some gigantic or inhuman quality of the scene recalled to him his youthful vision. The notes he kept are usually dull and repetitious; he made little attempt to create style. He found that his imagination and his meditation on aesthetics were stifled. Although he thought a little of writing several books, he mentioned neither Salammbô nor Hérodias. He felt he would have to get back to work before his artistic development could continue; but he hoped that the memory of his experiences would inspire him. On his second journey, undertaken when he had already begun writing Salammbô, Flaubert gave evidence of the same confusion and boredom, and the same hope for the future.

Flaubert told in his Correspondance that he returned to the aesthetic ideals formed before his travels; in later years he only developed the details of his theory. An analysis of Salammbô and Hérodias, made according to Flaubert's own theory, shows within each work that vision of the Orient which Flaubert first described in his youth: the cities and the plains and the death of man. The real Orient which Flaubert observed during his journeys contributed to this poet's Orient a few details which make more vivid scenes he had already imagined.

Thus the comparison of the Notes de voyage to Salammbô and Hérodias assumes its proper meaning. The journeys had been for Flaubert an interruption of his thought and of his dreams, but they eventually took a minor place in the uneven but unbroken development of his vision of the Orient. From his observations of reality in the modern Orient, recorded in his travel journals, he drew those details that fitted into his imaginative vision. 205 pages. \$2.56. MicA 55-330

THE GOTHIC VERSION OF I CORINTHIANS:
A DECIPHERMENT AND EDITION WITH A
COMMENTARY, TEXTUAL APPARATUS,
AND GLOSSARY

(Publication No. 10,726)

Sister M. Fides Huber, Ph.D.
University of Notre Dame, 1954

This decipherment and edition is based on Jan de Vries' photographic reproduction of Codd. Ambrosian A-B (Wulfilae Codices Ambrosiani rescripti [Florence, 1936]). The decipherment follows the text of Codex A, with reference to the extant variant readings in Codex B. Prior readings and emendations are cited in textual and critical apparatus. In order to verify the present decipherment, all disputed readings have been rephotographed at double size with greatly increased contrast.

MS Page and Line	Photographically Verified Decipherments	Other Decipherments
66.2	ist x̄s U Br	om. C
66.11	staifanaus C U	stefanaus Br
67.5	ni U	nih Br
67.20	handugozei Br	handugo C U
76.15	þo þan U; þairhgaleikonda Br	þþan Br; þairhgaleikoda U
77.15	-ai in x̄aū U Br	om. C
77.19	hugridai C U	huggridai Br
176.9	so Br	om. C U
177.4	jabai Br	om. C U
177.6	þau Br	þan U
112.3	bidjan U	bidan Br
113.5	jah so Br	jasso U
113.8	aigi Br	aig U
118.1	þu qinon Br	qinon U
118.2	ganajis U	ganajais Br
118.4	nu ei Br	ni ei U
118.8	galapoda Br	galapods U
183.17	mannam Br	mannan U
183.20	auhsau þriskandai	auhsau þriskaidai Br; auhsan þriskandan U
183.21	auhsunns U	auhsum us Br
136.10	inwitoþs U	inwitob Br
136.12	unmahteigam U	ummahteigam Br
126.3	auk U Br	om. C
85.11	þata U	þatei Br
85.12	ip þan Br	þan U
86.1	ei Br	akei U
122.18	fimf Br	fif U
144.9	izei Br	ize U
145.8	mannam Br	mannan U
145.15	usskarjib Br	usskawjib U

EMENDATIONS

The following abbreviations are used below:

- Bh = Ernst Bernhardt, Vulfilia oder die gotische Bibel (Halle, 1875).
 GL = H. C. von der Gabelentz and J. Löbe, Ulfilas. Veteris et novi testamenti versionis gothicae fragmenta (Leipzig, 1836), 2 vols.
 M = H. F. Massmann, Ulfilas: die gotischen Sprachdenkmäler (Stuttgart, 1857).
 S = Wilhelm Streitberg, Die gotische Bibel, I
 W = Ferdinand Wrede, Stamm-Heyne's Ulfilas oder die uns erhaltenen Denkmäler der gotischen Sprache (Paderborn, 1920), 13th-14th ed.

MS Page and Line	MS Reading	Accepted Emendations	Other Emendations
66.17	lausjaidau		
67.1	--qistja	uslausjaidau S	
67.7	ufkunnaida	fraqistja M W S	
76.12	galiuhteip		kunnaida GL
76.15	appan		gabairhteip S
77.19	hugridai		appan po S
77.21	ungastopai		huggridai M W S
177.6	pau	pan M Bh S W	ungastopanai M GL
177.8	gamelida		
177.13	wilwa		sai melida GL
177.14	ha mik		wilws GL
112.3	babro		ha auk mik M
112.11	sumzuh		babrop GL M;
118.1	bu qinon		babroh Bh W S
118.2	ganajis		sumsuh S
118.11	bimait ni waiht		qino Bh
	ni waihts ist		
119.5	atlapobs		galapobs M GL
136.3/4	gageigaidau	gageigaidedjau S W	
136.10	gageiggau		gageigaidedjau S
136.18	spraud		gaþarbaip M Bh W
137.3	gaparbiþ		ni swe du unwisamma M U W
137.6	ni du unwisamma		jah allai pata GL S
137.19	jah þata		fraujan M GL Bh
165.5	fraujin		
162.3	þuhtu	þuhtaus M S	
126.1	--ma	seinamma M S	
127.16	matjip		matjip jah drigkip M Bh S W
109.20	mais filu; þaurftai		filu mais S; þaurfta M GL
84.12	habau		ni habau M Bh S W
85.20	þan		ip þan M S
107.1	ainai		deleted S M
107.5	þande		" S
107.16	þaiei		" S Bh
144.3	gup		" S
98.10	bairaima		swa bairaima GL W
100.12	huhjands		huzdjands M
101.9	wenjan	wenja Bh W S	
101.17	unagans	unagands Bh W S	
150.10	apaustaulaus		apaustaulus S

165 pages. \$2.06. MicA 55-331

THE DILEMMA OF CHARLES-FERDINAND
RAMUZ

(Publication No. 10,767)

Roy George Julow, Ph.D.
University of Washington, 1954

The two themes of solitude and communion, individualism and collectivism, play a vital role in the work of the Swiss novelist and essayist, Charles-Ferdinand Ramuz. He was at once a fierce defender of the inviolability of the personality and of the truth of the individual and an ardent believer in the necessity of a force binding men together. This study was made in order to delineate his approach to these two concepts and to clarify their relationship in his thinking.

While Ramuz did generalize his thought, it was found that exploration of this problem would be most meaningful if his personal involvement in his ideas

were made the focal point. It was also discovered that the purposes of the study could best be accomplished by restricting investigation to his non-fiction.

The study divides Ramuz' thought into two major periods. The first, from 1896 to 1929, is subdivided into an individualistic phase (1896-1914) and a pursuit of communion (1914-1929). The second major period (1929 to the end of his life) is characterized by a conflict between the two forces.

The critical point of the question lies in Ramuz' search, through the prism of his own experience, for a solution to the spiritual disquietude of modern man. As a part of this search, he sought the essential in man, the human being, as opposed to the accidental attributes of man as an individual committed to history. Ultimately the "human being" meant simply man's consciousness of his isolation in history and his aspiration to emerge from his solitude into a meaningful relationship to the universe. Although he

used many terms to describe man's primary need, the most persistent was plenitude, total commitment to a concept of totality.

His first identifiable belief, in the vital necessity of apprehending and expressing his unique personality, was a cult of individuality, a self-styled cult of self. This gave way to a search for a reconciliation of the demands of self and the world he lived in. He looked to the world of physical reality for a means of unity and continuity, expressed both as a static principle of geographical determinism uniting him with the peasant of his province of Vaud, and, ultimately, with all men, and, as a dynamic principle of unity among men resulting from their communication of the life in and around them through the things they create.

In making these affirmations, Ramuz had rejected the culture of his society. Later he returned to an extended consideration of man and modern society, characterized by an effort to see in society, especially in communism, a possible solution to the problem of the spiritual void in man. Although he proposed to his compatriots a collective affirmation based on the permanence and continuity of their physical environs, Ramuz could not really accept the inevitable relativity of social solutions.

The major reason for the unacceptability of social solutions lay in a deep-seated conviction of Ramuz that man must achieve plenitude through his own agency, that truth is the result of a creative interplay between the human being and the material world. This view, expressed in a variety of forms, was derived from his earlier ideas but was divested of any notion of entrance into a pre-existent order or of a resultant communion among men; it was incompatible with any social commitment. Even the absolute possibilities of the human being were finally dissolved by Ramuz' corrosive skepticism, which led him to affirm as man's imperfection the relativity of the individual perception of truth.

218 pages. \$2.73. MicA 55-332

nineteenth century ideas are presented as they appear in the works of these men: for example, the idea of the "hero" or superman is treated in the sections on Carlyle, Wagner, Nietzsche, and Ibsen. We observe its relationship to other nineteenth century ideas, notably Creative Evolution, and the various forms it takes in Shaw's writings.

From this study Shaw's thought emerges as a synthesis of late nineteenth century ideas and as a continuation of the dominant nineteenth century tradition of romanticism. This tradition, in Shaw as well as in Butler, Bergson, Nietzsche, and William James, took the form of a rebellion against the mechanistic materialism of mid-nineteenth century science and philosophy. It upheld Creative Evolution — i.e., evolution by will and purpose — against evolution by "survival of the fittest"; its attitude towards metaphysics and theology was pragmatic rather than agnostic; and its ethics were relativistic. To this tradition Shaw added his peculiar brand of socialist economics — an amalgam of George's law of rent, Marx's economic determinism (which Shaw did not consistently uphold), Jevons's marginal utility, and Bellamy's economic egalitarianism.

Because of the external calm of late-nineteenth century Europe and the almost universal acceptance of liberal and humanistic values, Shaw adopted the belief that the only important public question is the economic question and that, consequently, the only proper criterion for judging political events is: do they advance socialism?

The Shavian synthesis worked quite well until 1914, but the great changes initiated by World War I created a world in which Shaw's fundamental assumptions were challenged. The long-term views of the Creative Evolutionists seemed irrelevant in a civilization that lived from day to day. Moreover, it was demonstrated again and again that the destruction of free institutions in a civilized country might be more than temporary. Shaw, still convinced that liberalism and humanism were not seriously endangered and that the advancement of socialism must take precedence over other problems, became more enthusiastic in his support of totalitarian "experiments" as such experiments became more feasible in the chaotic atmosphere of post World War I Europe.

The last chapter of this study summarizes Shaw's reactions to the political events of 1914-50 as the reaction of a nineteenth century mind to the twentieth century situation. It emphasizes the bitter irony of Shaw's unconscious self-betrayal, best exemplified, perhaps, by his defense of the Soviet secret police in preface to *On the Rocks*, the same preface which contains a passionate plea for freedom of thought and action as essential to human progress.

257 pages. \$3.21. Mic 55-40

BERNARD SHAW AND THE NINETEENTH CENTURY TRADITION (Publication No. 10,791)

Julian Bertram Kaye, Ph.D.
Columbia University, 1954

This study is an attempt to explain the wrong-headedness — in the opinion of this writer and of most, although not all, critics of Shaw — of Shaw's judgments of public events during the period between the end of World War I and his death in 1950, by an investigation of the influence of nineteenth century writers and of nineteenth century political, social and economic conditions upon his thought. His indebtedness to particular writers and groups of writers is discussed. Carlyle, Ruskin, Dickens, Mill, Comte, Matthew Arnold, Butler, Bergson, William James, Nietzsche, Goethe, Schopenhauer, Blake, Shelley, Henry George, Marx, Jevons, Bellamy, Ibsen, Wagner, and William Morris are studied as important influences. Leading

THE SPANISH EXPERIENCES OF JAMES RUSSELL LOWELL

(Publication No. 10,413)

Lawrence Hadfield Klibbe, Ph.D.
Syracuse University, 1954

Adviser: D. W. McPhee

The purpose of this study is to determine the part that Spain, its language, literature, and culture played in the life and work of James Russel Lowell. Although Lowell's cosmopolitanism did not appear as a dominant force until his appointment in 1855 as Smith Professor of French and Spanish at Harvard College, the period of his life until that date is reviewed in Chapter I.

Chapter II deals with his years as Smith Professor when he followed in the great tradition of Ticknor and Longfellow by fostering Hispanic studies in the United States; his other activities during these years as writer, editor, and correspondent, where Spanish may have influenced his thoughts and themes, are likewise investigated in this section.

His role as ambassador and man of letters in Madrid from 1877 to 1880 is studied in Chapter III while his diplomatic service in London and remaining years are the subject of Chapter IV. In Chapter V the analysis of the Spanish element in the works of Lowell is undertaken.

Despite some allusions to Spain in letters, observations of European travel, and a hope of viewing Spain during the trip abroad of 1851-1852, Lowell did not show definite indications of enthusiasm for Spain until his Lowell Institute lectures of 1855 and European study tour of 1855-1856. His tenure as Smith Professor provided many opportunities to continue in the path of American Hispanism. Another high tide of Spanish fervor arose around 1869, following the Civil War, but Lowell's failure to receive the Spanish ambassadorship was a disappointment. When he was finally rewarded the Madrid post, he was middle-aged and inclining increasingly toward a conservative approach to life and literature. Nevertheless, unpublished sources show that his stay in Madrid was significant and continued to influence him to the end of his days. His official years in Madrid probably represent the most favorable era in the diplomatic history of the two countries during the nineteenth century.

In his writings, the Spanish element tends to serve as background for his main idea so that while the Hispanic references are quantitatively somewhat noteworthy, they do not always occupy a foremost place.

With Cervantes and Calderón, it is otherwise. Both in number of allusions and importance of remarks, these two Spanish figures are vital to the analysis of Lowell's literary theories. In Cervantes, Lowell found support for three of his main themes: the concepts of humor, the gentleman, and the imagination. In Calderón, Lowell encountered a different stimulus. Unlike Cervantes, Calderón could not be included in a select circle of universal authors because of the nationalistic or Spanish flavor of his

works but would be inserted in an extended list. Calderón, nonetheless, is very necessary in a study of the imagination, as defined and utilized by Lowell, but primarily, the Spaniard is sought during crises when Lowell felt the need for inspiration, consolation, or relaxation.

In conclusion, Lowell's Spanish experiences reveal that he did not develop as thoroughly in Hispanism as did Irving, Longfellow, and Ticknor. Thus, with the exceptions of Cervantes and Calderón, the Spanish element or interest in Spain and things Spanish was generally a minor but constant source of influence.

365 pages. \$4.56. Mic 55-41

GIORDANO BRUNO'S EROICI FURORI
AND RENAISSANCE LOVE THEORY

(Publication No. 10,797)

John Charles Nelson, Ph.D.
Columbia University, 1954

This study seeks to further the understanding of Giordano Bruno's writings by an analysis of one of his most important works, the dialogue De gli eroici furori, in its relations to the genres of trattati d'amore, or Platonic love treatises of the late fifteenth and sixteenth centuries, and of prose commentaries upon sonnets or other verses, to both of which categories the Eroici furori belongs. Subsequently this dialogue is also examined in its relation to the other philosophical writings of Bruno. The analysis of love treatises, however, is carried beyond the bare minimum of description necessary for the understanding of the Eroici furori, in the conviction that they have not been adequately analyzed heretofore in their doctrinal detail and interrelation. The strong influence of the tradition of love treatises is seen to account in part for the marked Neoplatonism of this dialogue, which is stronger than in the whole of Bruno's works and is in contrast to some of them. The literary importance of the Eroici furori for the poetry of the seventeenth century is also demonstrated.

The following prose commentaries on verses are examined: Dante's Vita Nuova and Convivio; the commentaries on Guido Cavalcanti's Donna mi prega by Dino del Garbo, pseudo-Egidius Colonna, and Paolo del Rosso, all of which recognize that Cavalcanti's love is a passion of the senses; Lorenzo de' Medici's commentary of some of his own sonnets, which modifies the ascetic tendencies of Marsilio Ficino's Neoplatonic theory of love; Girolamo Benivieni's commentary on his eclogues; the exhaustive commentary by Giovanni Pico della Mirandola on Benivieni's Canzone d'amore; and Pompeo della Barba's Exposition of a Platonic sonnet.

The Platonic love treatise is a genre which began with Marsilio Ficino's Commentary (written in 1469) on the Symposium of Plato, and achieved great vogue in the sixteenth century. Together with Ficino's works, Leone Ebreo's Dialoghi d'amore (written c. 1501-2) greatly influenced subsequent treatises,

whose philosophical content was largely stereotyped. From the time of Pietro Bembo's *Asolani* (published in 1505) literary motives frequently were predominant. The treatises analyzed include those by Francesco Cattani da Diacceto, Mario Equicola, Baldassare Castiglione, Bartolomeo Gottifredi, Francesco Sansovino, Giuseppe Betussi, Sperone Speroni, Tullia d'Aragona, Benedetto Varchi, Flaminio Nobili, Francesco de' Vieri, Torquato Tasso, and Annibale Romei. Particular attention is given to the concepts of love and beauty; philosophical and courtly questions and "doubts" about love are also considered.

In Bruno's *Eroici furori* the genre of Platonic love treatises reaches a climax. The sonnets and prose commentary of its ten dialogues exalt the heroic lover's passion for the infinitely creative divine power immanent in the infinite physical universe, yet transcending nature and man. The strong influence of Ficino is demonstrated in Bruno's description of the soul and in the infinity of intellect and will. There is a detailed analysis of Bruno's relation to Petrarch; of the heroic lover's ascent to his divine object; and of the effects of love. The sincerity and enthusiasm of Bruno's "heroic passion" contrasts markedly with the tone of conventional love treatises. The "heroic" effort to know divine beauty and goodness to the limit of one's capacity is both a cognitive and a moral process.

Despite contrasts in doctrine and style, the *Eroici furori* is shown frequently to complement or agree with other writings of Bruno. It is argued that Bruno did not altogether abandon Platonism and transcendentalism in his later writings, as some critics (Felice Tocco, Antonio Corsano) have maintained. In conclusion, Bruno is seen to be a leader in the final stage of the Renaissance when the principle of authority in philosophy was abandoned for the direct interrogation of nature. 335 pages. \$4.19. Mic 55-42

Faust-like enchanter who lures her into his tower.

Marianne shared the life of the Willemer family during the Napoleonic Wars. Once she gave a performance on the guitar for the Empress Josephine. Marianne travelled to Rome, possibly as Willemer's mistress, and Zacharias Werner their guide in that city. Home again in Frankfurt it began to appear that Willemer's son Brami, who as a child had worshipped Marianne, was in love with her.

Goethe, journeying to Frankfurt in the summer of 1814 and reading the Persian poet Hafis, felt that he was travelling back toward youth, his own and the world's. He and Marianne met that summer. Her marriage to Willemer took place while Goethe was on a visit to Heidelberg. She was the inspiration for several poems which he wrote for his *Westeastern Divan* that winter and the next summer at Willemer's country place, the Gerber Mill. He called her "Zuleika" and discovered, to his joy, that she could answer him in poetry. The pleasant gift which she had employed in writing birthday poems for Willemer rose, in this summer of her love for Goethe, to such heights that her poems, published as his in the *Divan*, were long considered to be among his finest. Marianne's meeting with Goethe later in the summer at Heidelberg occasioned the writing of one of his greatest poems, "Wiederfinden." Goethe's poems to her that autumn and winter were filled with longing but gradually he came to know that he must renounce. He and Marianne never saw each other again.

Marianne's feelings fluctuated between hope and despair. The death of Brami in a duel, seemingly of his own seeking, caused her terrible suffering, which Goethe's continued absence brought to a crisis. Willemer invited Goethe to live with them but he did not accept. The publication of the *Divan* helped heal Marianne's heart. There in the "Book of Zuleika" she found that she lived forever with her poet in his world outside of time and space. The correspondence between the two continued until Goethe's death. He hid two great love letters and other messages for her in his novel *Wilhelm Meister's Years of Wandering*.

Marianne devoted herself to the ailing Willemer and also played an important role in musical and literary circles. Brentano returned and, in his own manner, wrote for Marianne a poem of "Wiederfinden." Bettina in a published work indicated it was she who had been Goethe's Zuleika. Marianne was adored by Willemer's children and grandchildren and by most of Frankfurt. She kept in close touch with Goethe's grandchildren. Few people realized what she had been to Goethe but she enjoyed talking about him with the young student Hermann Grimm. The Catholic forms of Christianity in which she, as an Austrian, had been raised, drew her back. Marianne died in 1860; the inscription on her tombstone reads, "Love never ends." 566 pages. \$7.08. Mic A 55-333

GOETHE'S ZULEIKA, MARIANNE VON WILLEMER, AND HER WORLD

(Publication No. 10,800)

Aurelia Grether Scott, Ph.D.
Columbia University, 1954

In 1798 Marianne Jung came with a woman who was probably her mother from Linz to Frankfurt on the Main to take part in performances of ballet, opera and dance. Two years later the banker Johann Jakob Willemer, who was a widower, made an arrangement with Frau Jung to take the sixteen year old girl away from the stage and into his house, where, together with his children, she was given a good education. Clemens Brentano, who had been attracted to Marianne when she danced the role of Harlequin on the stage and who was deeply resentful of Willemer's "protection" of her, was inspired by her to write, as he put it, "a few thousand earnest verses." She is the dancer Biondette in his *Romances of the Rosary*; he himself is her lover Meliore, and Willemer, the dark

MATHEMATICS

DOMAIN FUNCTIONALS FOR PSEUDO-ANALYTIC FUNCTIONS

(Publication No. 10,770)

Chi-Yuan Lee, Ph.D.
University of Washington, 1954

Let D be a bounded domain. Let $P(F, G)$ and $Q(F, G)$ be respectively the class of all (F, G) pseudo-analytic functions of the first and second kind on D under the inner products

$$(w, \tilde{w}) = \operatorname{Re} \int_D w \tilde{w} d\mu, \quad w, \tilde{w} \in P(F, G)$$

$$(\omega, \tilde{\omega}) = \operatorname{Re} \int_D \omega \tilde{\omega} d\mu, \quad \omega, \tilde{\omega} \in Q(F, G)$$

where μ denotes two-dimensional Lebesgue measure, and

$$\|w\|^2 = (w, w) < +\infty, \quad w \in P(F, G)$$

$$\|\omega\|^2 = (\omega, \omega) < +\infty, \quad \omega \in Q(F, G).$$

We show that $P(F, G)$ and $Q(F, G)$ form separate

Hilbert spaces and we prove the existence of "reproducing" kernel functions in $P(F, G)$ and $Q(F, G)$. Properties of, and integral relations among, these kernel functions are given. Analytic functions are then considered as a special class of (F, G) pseudo-analytic functions of the first kind.

We next extend the similarity principle with boundary conditions for simply-connected domains (proved by Bers) and we prove the similarity theorem (between meromorphic functions and pseudo-meromorphic functions of the first kind) with boundary conditions to multiply-connected domains bounded by analytic curves.

We finally apply the similarity theorem to show the existence of L -measures (which are analogous to harmonic measures for Laplace's equation) for boundary curves and boundary arcs and Green's function for partial differential equations of elliptic type of the form

$$\varphi_{xx} + \varphi_{yy} + \alpha\varphi_x + \beta\varphi_y = 0$$

where α, β are Hölder continuous functions on \bar{D} .

64 pages. \$1.00. MicA 55-334

MUSIC

A HISTORY OF THEORIES OF TEACHING PIANO TECHNIC

(Publication No. 10,621)

Roger Crager Boardman, Ph.D.
New York University, 1954

The purpose of this investigation is to determine the historical development of theories of teaching piano technic. The importance of the study is closely related to extensive public interest in piano playing and widespread use of the piano in all phases of music education. To a great extent, the quality of piano playing in home and school is the result of good teaching. The provision of a historical study of basic principles of teaching piano technic helps to satisfy the ever existent need for improvement in teaching by encouraging the fuller understanding which historical perspective can provide.

Theories which existed during the period 1753 to 1953 were examined in pertinent published data and divided into three schools, (1) Finger Technic, 1753-1850, (2) The Arm and Its Weight, 1850-1900, (3) Weight Relaxation, 1900-1953. They were

classified according to the following general categories: Instrumental Action, Physiological Action, Tone Production, Execution and General Teaching. Each category was further analyzed into specific components.

The nature of the evolution of these theories was ascertained by careful examination of all theories, which were analyzed in chronological order, and compared. New theories, changes in principles, interpretation, emphasis or method were recorded. Through further comparative procedures, the unique contributions of each teacher and changes in method were discovered and summarized. The associations of environmental factors with changes in theories were included in final summaries of theories of each period.

It was discovered that theories were concerned essentially with physical aspects of the playing mechanism. Their development paralleled that of general teaching theories which proceeded from original emphasis on certain single factors to the present trend which stresses the total entity first and proceeds to component parts. The growth of theories of teaching piano technic progressed from finger

technique as taught by Bach, Clementi and Czerny, through use of wrist and arm taught by Kalkbrenner, Leschetizky and Deppe, to coordinated use of all parts taught by Matthay, Breithaupt, Fielden, Ortmann and Whiteside.

Beginning with Leschetizky and Deppe, greater attention was directed to mental control. Theories of the twentieth century were concerned with piano action, study of muscles, joints, tendons and their actions, application of laws of leverage to the playing mechanism, emphasis on functions of the nervous system and its influences on muscular action, and greater stress on coordination of auditory, visual, and kinesthetic sense departments in developing piano playing skills.

In addition to specific influences of piano teachers, general influences of environmental factors affected the evolution of theories. There were modifications in the instrument, including addition of pedals and increases in key resistance and sonority. The two

latter factors required an increase in muscular activity and strength, the first to operate the mechanism, the second to satisfy the increasing demand for greater volume of sound, which was stimulated by changes in piano literature.

An increase in complexity of piano music and greater emphasis on extending ranges of volume, speed and expressiveness, were encountered in music of Beethoven, Chopin, Schumann, Brahms and Liszt. To perform this music, greater advances in technical facility were required and piano teachers were confronted with needs for meeting the demands of new music.

Finally, the playing of great nineteenth century virtuosi served both as inspiration and instruction to Deppe, Breithaupt and Matthay who, through close observation and keen analysis, developed theories of teaching technic which employed far more than before, the extensive capabilities of the entire body.

238 pages. \$2.98. Mic 55-43

PHARMACOLOGY

A CHEMICAL STUDY OF CARDIAC GLYCOSIDES IN EUONYMUS ATROPURPUREA JACQ.

(Publication No. 10,694)

Carman Arthur Bliss, Ph.D.
Purdue University, 1954

Major Professor: Egil Ramstad

The literature reveals conflicting evidence with regard to the presence of cardiac glycosides in Euonymus atropurpurea Jacquin (Celastraceae). The present investigation on the root bark of this plant established the presence of a series of cardiac glycosides. A structural study was carried out on one of these glycosides and on the monoglycoside derived from it. The names euatrosid and euatromonosid respectively were assigned to these two new compounds and formulas were proposed for them.

From one kilogram of fresh root bark E. atropurpurea, a total of 840 mg of crude glycosidal mixture was obtained by extraction and solvent partitioning. With the use of paper chromatography and color reactions the presence of seven different glycosides was demonstrated. The existence of two more glycosides in the plant was indicated but the small amounts present made confirmation of their glycosidal nature impossible.

Partial separation of the crude glycoside mixture was accomplished by fractionation on a cellulose column.

Twelve mg of pure euatrosid were isolated by rechromatographing, on a large sheet of filter paper,

the partially purified fractions obtained from the column and which contained this glycoside. Attempts to crystallize this material were unsuccessful. Euatrosid produced systolic stoppage of the frogs' heart.

The structural investigation of euatrosid and euatromonosid was carried out by acid and enzymatic splitting of the glycosides followed by chromatographic identification of the hydrolytic products. Hydrolysis of euatrosid with two β -glucosidases, emulsin and strophantobiase, produced glucose plus euatromonosid, a fact proving that euatrosid is a β -glucoside. Acid hydrolysis of euatrosid produced two monosaccharides plus a disaccharide. From the results obtained by chromatography of these sugars along with reference sugars in three separate solvent systems, and from the colors of the spots produced with p-anisidine hydrochloride reagent, glucose and arabinose were identified. It was established that only one arabinose and one glucose molecule were present in the glycon fraction of euatrosid (1) from the fact that only two monosaccharides and one disaccharide were produced by the acid hydrolysis and (2) from comparison of chromatograms containing standard solutions of glucose and arabinose in the ratios of 1:1, 2:1, and 3:1 with a chromatogram containing a mixture of sugars from the acid hydrolysis of euatrosid. By acid hydrolysis of euatromonosid only one sugar, arabinose was formed. From the findings the following structure for euatrosid proposes itself:

A glycon - O - arabinose β glucose.

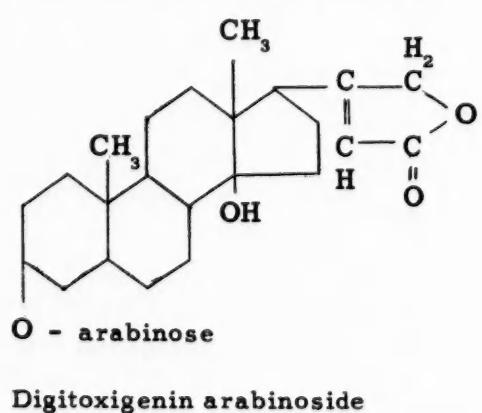
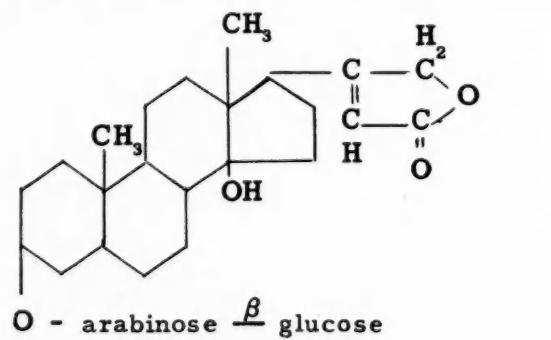
A study of the structure of the aglycon portion of euatrosid was carried out by paper chromatography

of the chloroform-soluble constituents produced by acid hydrolysis of euatroside.

The results showed that the aglycon fraction of euatroside behaved identically to the aglycon fraction of Digitoxin U.S.P. Reference Standard. In comparison, the aglycon fraction of Digoxin U.S.P. Reference Standard differed from the other two. Acid hydrolysis of digitoxin furnishes two forms of the aglycon, which have different R_f values. One of the aglycon spots consists of the true genin, the other is probably the anhydrogenin formed from the acid hydrolysis. The R_f value of digitoxigenin was identical to that of the genin of euatroside, while digoxigenin gave a lower R_f value than digitoxigenin. Also the anhydrodigitoxigenin gave the same R_f value as did the anhydrogenin from euatroside. When treated with a reagent containing trichloracetic acid and sodium hypochlorite, the two genin forms from both euatroside and digitoxigenin gave the same yellow fluorescent color while the genins formed from digoxin gave a blue fluorescent color.

Upon acid hydrolysis of euatromonoside, the same genins were formed as the ones formed by acid hydrolysis of euatroside.

From the evidence obtained, the following structures for euatroside and euatromonoside are proposed:



117 pages. \$1.46. MicA 55-335

THE RETENTION OF AN INSECT REPELLENT IN EMULSIFIED BASES AT THE SITE OF APPLICATION

(Publication No. 10,696)

Paul William Gerding, Ph.D.
Purdue University, 1954

Major Professors: Glen J. Sperandio
John E. Christian

The objective of this work was to investigate various factors affecting the retention of dimethyl phthalate in emulsified creams at the site of application by means of radioactive tracer techniques. With this in mind a procedure for the application and counting of radioactive ointments and creams on the shaved skin of a horse was developed using I^{131} labeled sodium iodide and iodoform along with techniques for determining the retention of materials on the skin under three experimental conditions: normal, exposure to a fine spray of water, and sensible perspiration.

An ascending paper partition chromatographic procedure was developed and the radiochemical purity of C¹⁴ labeled dimethyl phthalate was ascertained. Several series of emulsified creams containing forty per cent dimethyl phthalate were formulated. From these formulations a standard cream, to which the performance of others could be compared, and six other creams were chosen for evaluation.

During the course of evaluation under normal conditions it became apparent that continued shaving and exposure of the skin resulted in a loss of its natural supple qualities and caused poorer retention. For this reason all creams were evaluated concurrently in order to obtain accurate data on their relative performance. The effect of temperature on the retention of dimethyl phthalate in the standard cream was measured and in general higher temperatures result in poorer retention. Two perfume fixatives, Benzoin Tincture, U.S.P. and Tincture of Civet, were substituted for an equal quantity of water at the three per cent level in the standard cream but did not improve the retention. In the water spray experiments it was shown that the water temperature, varying from 50° to 70° F., had no effect upon the retention of dimethyl phthalate in the standard cream.

The seven dimethyl phthalate creams were evaluated under the experimental conditions and two creams containing five per cent of an acetostearin were chosen as a basis for further formulation because of their favorable performance. A change of one emulsifier in the acetostearin containing creams did not affect retention.

On the basis of data obtained, an improved dimethyl phthalate cream containing fifteen per cent of the acetostearin was formulated, evaluated, and found to be superior to all others in this study.

From this work the following conclusions may be made:

1. A w/o emulsion containing dimethyl phthalate provides better retention at the site of application

than an o/w cream containing the same ingredients in identical quantities except the emulsifiers.

2. The retention of dimethyl phthalate in emulsified creams is affected by the fatty or lipophilic ingredients in the cream.

3. A dimethyl phthalate cream containing fifteen per cent of an acetostearin provides better retention than any other cream evaluated.

4. The condition of the skin is a definite factor in the retention of dimethyl phthalate on the skin.

87 pages. \$1.09. MicA 55-336

**A STUDY OF THE DEPRESSOR ACTIVITY
OF VERATRUM VIRIDE**

(Publication No. 10,338)

Mary Jeanne Noonan, Ph.D.
Purdue University, 1954

Major Professor: L. D. Edwards

The original objectives of this research were to determine if the constituents of Veratrum viride N.F. responsible for the vasodepressor activity of the drug were also concerned with the toxic activity of the Veratrum preparations presently in use, perfection of methods of detoxification of the drug if the toxic principles were not the same as the physiologically active principles, and to attempt the isolation and the evaluation of the pure depressor constituents. Methods of assay of the crude drug preparations and isolated fractions were also studied, i.e., Daphnia Test, Mouse Test, Rat Test, and Dog Blood Pressure Method. In the isolation phase of the work the dog blood pressure method was used exclusively. This combined approach of many varied chemical extractions and physiological testing of all individual fractions permits the following conclusions:

(1) The degree and duration of the depressor effects of Veratrum preparations can be satisfactorily evaluated in anesthetized dogs.

(2) Alkalization of aqueous or acid extracts of Veratrum viride with ammonium hydroxide, sodium hydroxide or calcium hydroxide reduced or destroyed the blood pressure lowering activity, depending upon the time of contact with the alkali. Sodium bicarbonate or barium carbonate were not as detrimental as alkali hydroxides to the depressor activity.

(3) Lead acetate, lead subacetate, Mayer's Reagent, mercury bichloride and Lloyd's Reagent partially removed the depressor principles from active extracts.

(4) The depressor principles of Veratrum viride may be extracted from the drug with water, ethanol, amyl alcohol, liquefied phenol and 5% aqueous solution of propylene glycol.

(5) Jervine, rubijervine and pseudojervine possess no depressor activity.

(6) Rubijervine was obtained from residues exhibiting depressor activity seemingly at the expense of the potency of the original residue, indicating that crystallization of an inactive compound occurs by virtue of some change or destruction of the depressor principles.

(7) During the course of experiments conducted in this study, colloidal properties of the depressor principles of Veratrum viride were suggested by the formation of a scum in concentrated active extracts, variable solubilities, difficulties in crystallization, formation of jelly-like clear masses in very concentrated alcoholic or aqueous extracts, incomplete precipitation and extraction.

(8) Alkaloidal properties of the depressor principles were suggested by the formation of a precipitate with alkaloidal reagents, and general alkaloidal extraction methods yielding some active depressor principles in addition to inactive crystalline alkaloids.

(9) Glycosidal properties of the depressor principles were suggested by a positive Fehling's test indicating the presence of reducing sugars, the isolation of sucrose from extracts of the crude drug, and the solubility of the depressor principles.

(10) Phenolic properties of the depressor principles were suggested by the solubility of the principles and the precipitation of an active compound with bromine.

(11) Properties similar to the choline derivatives were suggested by the physiological activity of the depressor principles and the formation of a precipitate with Reinecke's salt.

157 pages. \$1.96. MicA 55-337

PHILOSOPHY

THE THEORETICAL ETHICS OF
THE BRENTANO SCHOOL
A PSYCHO-EPISTEMOLOGICAL APPROACH
(Publication No. 10,781)
Harry Bear, Ph.D.
Columbia University, 1954

This is a study of the endeavor on the part of Franz Brentano and his disciples, Oskar Kraus and Georg Katkov to evolve a satisfying theoretical ethic and an abiding axiology. Their effort is marked by a desire to avoid the pitfalls of moral relativism and subjectivism on the one hand, and unwarranted confidence in a preformed ontological value-structure on the other.

The central significance imputed to psychology by the Brentano school makes it imperative to begin by referring to some of the relevant psychological principles enunciated by Brentano. These include the basic difference between descriptive and genetic psychology, the three categories of mental phenomena, i.e., representation, judgment, and interest-activity, and the intentional and dual nature of consciousness. Subsequent psychological refinements bearing on value-philosophy are also examined. These include differences between primary and secondary consciousness with respect to the origin and nature of sensible pleasure and pain, the "trace sensations", and the relation of felt intensities to apposite sensed extended continua.

The evolution and results of the Brentano school's epistemological teaching is then examined. Here are the more outstanding conclusions: We cannot know individuals, not even our own selves but the quality of our knowledge nevertheless does vary in generality. Universals are products of the abstractive process; as such they are simply mental fabrications, not realities. The terms 'real' and 'thing' have the same significance and whatever is thinkable must be based on the real, on something. Furthermore linguistic analysis brings to light two kinds of terms, auto-semantic and synsemantic. The latter only have contextual meaning and in se represent nothing. There are two basic kinds of evidential truths, vérités de fait and vérités de raison. The former are identities while the latter are negative and apodictic certainties begotten by insight operating on concepts. The vital importance of insight is thus brought out. The apodictic judgments contrast with blind ones.

Along with this analysis of the nature of evidence the correspondence theory of truth is minutely scrutinized and completely rejected. Brentano's endeavor to refute the charge of psychologism, and his opposition to Husserl's phenomenology – an opposition abetted by Kraus – are also included in the part on epistemology.

These psycho-epistemological speculations prepare the ground work for ethical theory. In that domain the notion of the "characterized-as right", predicated of emotional dispositions is the basic ethical idea. "Pain is an evil" therefore means that it is impossible to be rightly disposed towards it as an end without detesting it.

The significance of the better has its experiential origin in the phenomena of preference characterized as right, and both material and formal axioms of the better are then studied. For example, Katkov's effort to show that the proposition, 'The existence of good is itself a good' is seen as an axiomatic judgment of preference.

Following this, Katkov's sharp attack on the principle of summation, his views on the existence-worthiness of individuals and communities, his criticism and refinements of Brentano's theories concerning sensible pleasure and pain, and his controversy with Sir W. D. Ross over the relation of the good to the right are examined.

Lastly, the Brentano school's views on determinism, freedom, and probability as these ideas relate to the highest practical end, are investigated. That end finds its expression in the maxim: Do the best you can in any circumstance.

280 pages. \$3.50. MicA 55-338

SAINT THOMAS ON THE INDIVIDUATION OF BODILY SUBSTANCES

(Publication No. 10,721)

Joseph Bobik, Ph.D.
University of Notre Dame, 1953

The one end of this study is to understand the principle of the individuation of bodily substances taken precisely in the line of nature, and this in the absolute or simple fullness of individuating vitality. The material ens in the line of nature, i.e., the material ens taken precisely as individual nature, is numerically distinct from others of the same species; it is numerically one; it is numerically identical throughout its development and change in time. It is incommunicable to others as to inferiors. It is determined to the here and now, to here-and-now sensibility, hence to indefinability and to denotability by the finger. It differs from the specific nature. Only that principle which explains the bodily individual nature in the totality of its characteristics is the principle of individuation in the absolute fullness of individuating vitality. Matter under untermated dimensive quantity (materia sub dimensionibus interminatis) claims in

its intelligibility the intrinsic principles which account for numerical distinction, for numerical unity, for numerical identity, and for incommunicability to others as to inferiors (thus, by this last named characteristic, partially for the distinction of the individual nature from the specific nature). Its dynamism, however, lacks the strength to account for determination to the here and now, to here-and-now sensibility, and to the consequent indefinability and denotability by the finger (hence for the completion of the distinction of the individual nature from the specific nature). This strength belongs to the materia signata of Saint Thomas. Materia signata claims in its intelligibility all that is claimed by materia sub dimensionibus interminatis; in addition, it claims that complete more which claims for it the absolute fullness of individuating vitality.

To aid the attainment of its end this study employs the valuable and clearly formulated insights of John Capreolus, the Princeps Thomistarum, and of Sylvester of Ferrara, wherever they help to give a fuller understanding to the position of Saint Thomas. It treats the positions of Cajetan and of John of St. Thomas (both differing radically from Saint Thomas, and to an extent from each other), and this primarily to emphasize the fact that the quantitative dimensions which contribute to individuation, contrary to the views of Cajetan and of John of St. Thomas, are actual quantitative dimensions. It treats the difficulty of determined dimensions vs. unterminated dimensions in the writings of Saint Thomas, and offers a reconciliation of the apparently opposed texts. It points out that the materia signata of Saint Thomas and that born of Cajetan are not one. The materia signata of Cajetan (appearing in John of St. Thomas as materia signata quantitate, but with an intelligible content differing somewhat from that given to it by Cajetan), taken precisely as signata, and, as such, the principle of individuation at once in respect of incommunicability to others as to inferiors and in respect of numerical distinction, has planted the seed of a confusion which has lived and grown into the present day. In conclusion, this study offers a brief evaluation of the most profound and most excellently exhaustive contemporary study on the individuation of bodily substances in Saint Thomas, the "Il pensiero di San Tommaso sul principio d'individuazione" of the Italian Dominican, Father Degl'Innocenti. This it follows with the principle of individuation in summary.

411 pages. \$5.14. Mic 55-44

NEUTRAL MONISM IN MACH

(Publication No. 10,745)

Peter Joannides, Ph.D.
Cornell University, 1955

This essay deals with Mach's general theory of sensation. The problem investigated is mainly that of the nature of sensation and the relationships of sensations to physical realities.

Chapter 1.

A brief review of the idealist or subjectivist tradition preceding Mach. References to Protagoras, Plato, Aristotle, St. Augustine, Descartes, Locke, Berkeley, and Hume.

Chapter 2.

An outline of the Machian view: The only realities are the sensations or elements — which are, in themselves, neither physical nor mental. "Bodies" and "Egos" are simply systems of sensations in complex relations of functional dependence. The external world is dependent upon the perceiver in the sense that the "outer" sensations are co-determined by the "inner" or "bodily" sensations; it is independent of the perceiver in the sense that there is discoverable among the "outer" sensations certain sub-dependencies and sub-regularities that are relatively independent of the "bodily" sensations. It is the task of natural science, in the broadest sense, to record these relatively independent sub-regularities of the "outer" sensations.

Chapter 3.

Mach's view of "substantial" primitive sensations: The underived, concrete realities are not only the simple colours, sounds, odours, etc., but also other sensations (or sensational characters), such as sensations of space and distance (and perhaps even sensations of solidity). That is to say, part of the intrinsic make-up of the sensations is their spatial relatedness to other sensations. Depth and distance are experienced as directly as colour and sound.

Comparison of Mach and Avenarius.

Chapter 4.

Mach's view of ordinary language and the naive realism of the plain man: The "objective" concepts of ordinary language function as economical classifications of the sensational multiplicity. They reflect the presence or absence of complex sensational coherencies. Ordinary language is indispensable to the biologically oriented human organism in its struggle to survive and to adapt itself favourably to its environment.

Chapter 5.

Mach's view of scientific concept-formation: Scientific concepts (atom, molecule, energy, etc.), like the concepts of ordinary language, also function as abbreviations for certain sensational correlations. However, such concepts are apt, at times, to be more detrimental than useful; and by expressing scientific findings simply in terms of the functional dependence of the elements, many confusions and pseudo-problems will be dispelled, and the cross-relations between the different sciences will become much clearer.

Chapters 6 and 7.

Criticism: Mach's sensational theory amounts to a systematic violation of ordinary language. This can be seen by analyzing the logical characters of the ordinary-language concepts of "sensation," "feeling," "dependent," "real," "exists," "similar," "construction," "cohere," "fit in," "combination," "presentation," "given as," "abbreviation," "system,"

"pattern," "refer," "experience," and many others. All of these concepts are consistently misapplied by Mach in his presentation of the sensational theory. There is no way of transcending the complex conceptual network of ordinary language; every attempt to do so involves borrowing and making use of the very concepts that one is trying to transcend. There are no privileged or super concepts, so to speak, whereby the sensationalist can express the inexpressible. In the end, we are left only with unexplained technical terms and, at best, a suggestive metaphor. The ultimate criticism that can be brought to bear against the sensational theory is that of unintelligibility.

Chapter 8.

Concluding Remarks: Perhaps we should interpret the sensational theory as a kind of terminological proposal rather than as a philosophical ontology – as a recommendation for the adoption of a new sensational vocabulary to replace the over-specialized conceptual structures of the different sciences. If so, two very real problems arise:

- How can this new sensational vocabulary be set up?
- Even if a new sensational vocabulary can be set up, how will it prove any more useful than the current scientific vocabulary?

Appendix.

Phenomenalism after Mach: References to B. Russell, C. D. Broad, A. J. Ayer, H. H. Price, R. Carnap, and the Logical Positivists. Mach as the forerunner of Logical Positivism.

209 pages. \$2.61. MicA 55-339

THE NATURE OF EXPERIENCE AND ITS ROLE IN THE ACQUISITION OF SCIENTIFIC KNOWLEDGE ACCORDING TO THE PHILOSOPHY OF ST. THOMAS AQUINAS

(Publication No. 10,728)

Joseph Luke Lennon, O.P., S.T.B., Ph.D.
University of Notre Dame, 1954

This is a study of the nature of experience and its contribution to scientific knowledge. By "experience" is meant human experience; animal and angelic experience are referred to only in order to clarify the notion of human experience. The term "science" is taken in its strict Aristotelian-Thomistic sense so that it may be distinguished from other types of knowledge which bear the name "science" only improperly or in a wide sense. While recognizing the existence of diverse viewpoints, the problem is treated exclusively from the standpoint of Thomistic philosophy.

Experience is a trying or testing of objects in reality in order to obtain knowledge about them. More than that, it is a unification or integration of all the sensory impressions received, retained and remembered about some object of particular value

to man, which integration results from the collative activity of the cognitive power for the purpose of knowing some particular object or performing some particular action. Animal experience has only biological utility; human experience has a higher ordination to intellectual knowledge. To the cognitive sense is reserved the unique function of synthesizing all the sensory elements of experience. This is the ultimate act of the entire sense order preparatory to intellectual abstraction. In the ascent from the particular to the universal, the important movements of the process are centered about perceptions of value, for all experience has a value attribute.

From experience are derived the first concept of being, the first principles of all knowledge, the concepts of mathematics, and from it progress is made to the heights of metaphysics and knowledge of the suprasensible world. All universal propositions and definitions used as principles in demonstration are obtained by induction; and induction requires an understanding of the state of sensible things, certain acts of comparison, and an accumulation of sensible experiences leading to a universal judgment. Moreover, as all knowledge arises from experience, so also it must, in some way, be reduced to its ultimate source in experience; otherwise it becomes idealistic or fideistic.

Any attempt to obtain scientific knowledge must respect the natural order in which the mind comes to know. In learning man proceeds from what is more known to himself to what is less known to himself. The things of experience are first known to man; hence the experience of the individual will form the starting point of all learning. At the beginning learning will be experiential, inductive and a posteriori. The degree of experience possessed by the learner will provide the criterion for the order in which the various sciences must be taught.

Man learns not only from his own experience but also from the experience of other men. Before starting any inquiry it is only reasonable to take into account the experiences of those men who have been concerned with the same problem. History provides us with many helpful lessons and man can make little advance in knowledge without the funded experience of those wise men who have gone before him.

205 pages. \$2.56. Mic 55-45

REASON, SPACE AND REALITY IN THE PHILOSOPHY OF EMILE MEYERSON

(Publication No. 10,692)

Colleen Grimm Sterling, Ph.D.
Bryn Mawr College, 1954

This dissertation, "Reason, Space and Reality in the Philosophy of Emile Meyerson," is an attempt to determine whether the function of reason, as conceived by Meyerson, is adequate to account for the possibility of knowledge. To accomplish this purpose, the metaphysical implications of Meyerson's

epistemological theory are examined in order to discover what must be the nature of reality if it is amenable to Meyersonian reason.

Part I is devoted to a discussion of the function of reason. The analysis is primarily of abstract, as opposed to concrete reason. In a section entitled, "The Hypostatization of Sensations," Meyerson's account of the origin of the common sense world is examined. It is pointed out that hypostatization constitutes the weakest link in Meyerson's account of the origin of knowledge. The Principle of Law is next examined, and with it Meyerson's account of the origin of the concepts of space and time. In the chapter on Explanation, it is shown that reason, guided by the one *a priori* principle of identity, seeks to reduce *Becoming to Being* and *Being to Not-Being*. Finally, it is shown how concrete reason seeks to reduce reality to space, primarily by means of the hypothesis of mechanism.

In Part II an attempt is made to make explicit the metaphysical implications of Meyerson's epistemology. It is pointed out that Meyerson's abstention from metaphysical commitments is primarily motivated by his inability to choose between realism and idealism. In a discussion of the irrational aspect of reality it is shown that Meyerson identifies irrationality with existence, and existence with space. It is pointed out

that Meyerson has attempted to identify existence with the level of common sense, in order to assert that the given can be the object of knowledge.

In a discussion of the rational aspect of reality it is shown that reality has a hierarchical structure, at the base of which are the concrete objects of common sense, and at the apex of which is the most abstract of *genres*, the essence of reality. The essence of reality is identified by Meyerson with the concept of space-time of the theory of Relativity. Thus it is shown that Meyerson regards both the rational and irrational aspects of reality as identical with space, or space-time.

In Part III an evaluation of the adequacy of Meyerson's philosophy to account for the possibility of knowledge is undertaken. Meyerson suggests the possibility of a spatial schematism of reason and reality, indicating that reality is amenable to reason by virtue of the accord between the concept of space and the *a priori* principle of identity. A further examination of the concept of space reveals that the essential character of space, its extension, is given in sensation. It is argued that extension is synonymous with existence, and that it cannot be an object of knowledge. It is concluded that Meyerson cannot account for the possibility of knowledge because existence itself must be regarded as an unknowable *Ding-an-Sich*.

196 pages. \$2.45. MicA 55-340

PHYSICS

PHYSICS, GENERAL

VACANCY CONCENTRATION IN ALKALI-HALIDES

(Publication No. 10,105)

Richard Henry Duncan, Ph.D.
University of Missouri, 1954

Supervisor: George H. Vineyard

The basic form of the equation for vacancy concentration in crystals is $c = A \exp(-\frac{\phi}{T})$ where ϕ is the activation energy for a vacancy and T is the absolute temperature. The pre-exponential factor, A , can be identified from thermodynamics as $A = \exp(s)$, where s is the entropy of formation of one defect.

It can be shown that $s = \ln \frac{\omega_i}{\omega_i'}$, where ω_i and ω_i' are the lattice frequencies before and after formation of one defect. Calculations of this quantity are carried out for NaCl, KCl, and LiBr, with force constants derived from Born-Mayer, Van der Waals, and Coulomb contributions to the interionic potentials. The Coulomb field is approximated by calculation only to fourth neighbors. Two models are used:

(a) an Einstein model and (b) the Born-von Karman model which takes into account the coupling between modes of vibration. The latter calculation is in terms of the defect dependence of the moments of the frequency distribution function; the moments are related to traces of powers of the dynamical matrix for the vibrating crystal. Defect dependence enters the moments through the fact that some force constants are missing from the dynamical matrix of a crystal containing vacancies. (Alteration of the remaining force constants by relaxation is not treated). With both of these models, order of magnitude agreement between theory and experiment is obtained for NaCl and KCl; the results for LiBr are ambiguous.

An analysis based on a Debye function for the lattice frequencies is also presented. The final formula of this method is in terms of the defect dependence of the elastic constants of the crystal. Data for the evaluation of the method is not available at present. In any case, the results are probably of qualitative significance.

Each of the methods is applicable to interstitial defects, although no calculations are presented.

94 pages. \$1.18. MicA 55-341

**THE ANNIHILATION OF POSITRONS
IN FLIGHT**

(Publication No. 10,765)

Donald Jackson Farmer, Ph.D.
University of Washington, 1954

The electromagnetic radiation spectrum attributed to the annihilation of positrons in flight has been investigated. The spectrum of positrons emitted by C^{11} is allowed to stop in aluminum, tantalum, or lead and the resulting radiations investigated with a NaI(Tl) scintillation spectrometer. A relative efficiency calibration of this instrument, determined using radioactive isotopes whose decay proceeds through either a positron-gamma or gamma-gamma cascade, allows comparison of the theoretical and observed annihilation in flight spectra on an absolute basis. Only that portion of the annihilation spectrum which lies above the bremsstrahlung spectrum is examined.

The existence of the one-quantum annihilation process is established and the theoretical cross-section confirmed. The results indicate that outer electron shells participate in this annihilation process. The dependence on atomic number is shown qualitatively.

Results for two-quantum annihilation in flight are also in agreement with theory. Reasons, suggested by difficulties encountered in this experiment, are proposed to explain the apparent disagreement with theory found by other investigators.

95 pages. \$1.19. MicA 55-342

A detector system built around a proportional counter and utilizing a channel discriminator provides an accurate measurement of x-ray intensity. Undesired background radiations (from higher order Bragg reflections, scattered x-rays of appreciably different energy than that being studied, radioactive contamination, and cosmic rays) are effectively eliminated. The detector system has a linear and constant calibration over a usable range of intensities of greater than 1,000 to 1. With highly stabilized apparatus, absorption spectra for the chlorine K-edge in KCl and in NaCl are recorded with a resolution of the order of 0.1 ev. The edge occurs at about 2,800 ev, and structure within plus or minus 20 ev is recorded. Large qualitative differences appear in the spectra of the two solids. And, in each case, the structure is temperature sensitive.

An unexpected "thickness effect" occurs in the absorption spectra depends on the thickness of the sample. The explanation of this effect lies in the distortion caused by the particular shape of the spectral window inherent in the finite physical resolving power of the spectrometer. A new method is developed for unfolding the observed distorted spectrum to obtain a "true" absorption spectrum. After this correction for resolving power, the spectrum is complex, probably consisting of at least five intense component "lines" lying in a range of about 6 ev and each having a very narrow width (less than about 1 ev). The component "lines" are superposed on the continuous absorption which may also contain some secondary structure. This multiplicity of bound localized states below the continuum is not explained by present theoretical models.

108 pages. \$1.35. MicA 55-343

**LOCALIZED ENERGY STATES IN
CRYSTALLINE ALKALI CHLORIDES BY
SOFT X-RAY ABSORPTION SPECTROSCOPY**

(Publication No. 10,744)

Charles Francis Hempstead, Ph.D.
Cornell University, 1955

Radiative transitions in the soft x-ray range of energies (50 to 5,000 ev) have been presumed to give direct information about the density of energy states in solids. The relatively narrow inner x-ray levels provide a sharp probe with which this solid state band structure can be investigated. Careful measurement of the absorption fine structure in the vicinity of the K-edge of chlorine in alkali chlorides with high resolving power, however, shows that the above interpretation is grossly oversimplified. The inner vacancy resulting when the K-electron is photo-ejected causes a perturbation of the normal periodic potential in the vicinity of the ionized atom. This atom of atomic number Z appears, to a first approximation, as a $Z + 1$ impurity atom in the solid. Localized energy states formed by the perturbation must be invoked to explain the observed fine structure in the absorption spectra.

A two crystal vacuum spectrometer, using calcite crystals in first order, monochromatizes the x-rays.

PHYSICS, NUCLEAR

**ANALYSIS OF SCATTERING THEORY FOR
SPHERICALLY SYMMETRIC POTENTIALS**

(Publication No. 10,699)

David S. Carter, Ph.D.
Princeton University, 1952

A method, due to Jost, for the construction of the S-wave phase-shift for a Schrödinger equation with an arbitrary spherically symmetric potential, is extended to include phase shifts of all angular momenta, for both Schrödinger and Dirac equations. This method provides a basis for a unified discussion of those phase-shift properties which depend only upon the behavior of the potential at infinity, and not upon its behavior in any finite region. Such properties as the asymptotic behavior of the phase-shifts for large and small values of the radial momentum, k , and for large values of the angular momentum, are rigorously established.

Even more interesting, from a theoretical viewpoint, are the results regarding the relationship

between the phase-shifts and the bound states. Each phase-shift $\eta_f(k)$, and the corresponding eigenvalue, $s_f(k)$, of the S-matrix, is related to the solution $f_f(k, r)$ which is asymptotic at infinity to a pure incoming wave of radial momentum $-k$, by a generalization of Jost's relationship:

$$s(k) = e^{2i\eta} = f(k, 0)/f(-k, 0) .$$

In this way, Jost's demonstration that the redundant zeros of $s(k)$ are actually singularities of $f(k, r)$ for positive imaginary values of k , is directly extended. By generalizing a result due to Bargmann, it is shown that the singularities for two potentials, V and V_1 are coincident for $\text{Im}(k) < \alpha$, provided the integral $\int_b^\infty e^{2\alpha r} |V(r) - V_1(r)| dr$ converges. (Since each singularity on the imaginary axis need not give rise to a "redundant" zero, this does not imply that V and V_1 have the same "redundant" zeros). Finally, Levinson's relationship between the value of $\eta(0)$ and the number of bound S-states is directly generalized.

101 pages. \$1.26. MicA 55-344

in the grain densities of their tracks. In the momentum interval of interest protons had energies greater than 50 Mev so that their tracks were almost invisible in the C-2 emulsion; tracks of deuterons in the same momentum interval, however, could be detected with nearly 100% efficiency.

The production from deuterium was observed by taking a CD_2 -C difference. The same emulsion was used to detect the recoils from both targets. The tracks originating from one target were made distinct from the tracks of the other target by rotating the emulsion plane 180° about its perpendicular axis when the targets were changed. This technique permitted simultaneous scanning of the CD_2 and C yields and thus avoided any difference in scanning efficiency for the two sets of tracks.

The absolute value of the cross section for the elastic process was determined for a gamma ray energy of 270 Mev at meson angles of 168° and 124° in the laboratory (170° and 131° in the center of mass). The values in units of $10^{-30} \text{ cm}^2 \text{ sterad}^{-1}$ are 3.17 ± 0.89 at 124° and 1.30 ± 0.52 at 168° . The errors indicated represent the total experimental uncertainties.

The magnitude of the cross section is clear evidence that the amplitudes for π^0 production from the neutron and proton interfere constructively rather than destructively. The experimental results, therefore, support the "charge symmetric" meson theory which predicts constructive interference as opposed to the "neutral" theory which predicts destructive interference.

The angular distribution of the elastic π^0 production from deuterium is related to the angular distribution of π^0 production from hydrogen. If the latter process is assumed to have a center of mass distribution of the form $a + b \sin^2 \theta$ then it follows from the ratio observed for the 168° and 124° values of the elastic cross section that $\frac{1}{3}b \leq a \leq \frac{4}{3}b$. The experiment thus confirms the existence of an isotropic term in the angular distribution of π^0 's photoproduced from hydrogen. 135 pages. \$1.69. MicA 55-345

THE ELASTIC PHOTOPRODUCTION OF π^0 MESONS FROM DEUTERIUM

(Publication No. 10,741)

Harold Larue Davis, Ph.D.
Cornell University, 1955

The 315 Mev bremsstrahlung of the Cornell synchrotron was used to study the process $\gamma + D \rightarrow \pi^0 + D$. The recoil deuterons were bent through a 40° angle by a uniform magnetic field and were then detected by Ilford C-2 200-micron emulsions inclined with a vertical angle of 45° to the deuteron trajectory. The deuteron momentum was determined by observing the horizontal angle of incidence in the emulsion. Deuterons and protons of the same momentum were separated by the difference

PHYSIOLOGY

ELECTRICAL ACTIVITY IN TISSUE CULTURES OF CHICK EMBRYO SPINAL GANGLIA¹

(Publication No. 10,785)

Stanley M. Crain, Ph.D.
Columbia University, 1954

Action potentials in response to electrical stimulation were observed in chick embryo spinal ganglion cells which had been cultured by the Maximow slide method for as long as 7 weeks without transferal. Intracellular as well as extracellular recordings

were made via electrolyte-filled glass pipette leads whose tip diameters were much less than 1μ . The experimental arrangement permitted simultaneous visual observation of the microelectrodes and cells under a high-powered microscope. The amplitudes of the membrane action potentials of many of the ganglion cells reached 80 to 95 mV. and involved overshoots of 30 to 40 mV. above a resting potential range of 50 to 65 mV. The membrane spike, which occurred after latencies varying from less than a few tenths of a msec. up to 12 msec., was often preceded by a more slowly rising "prepotential" and followed

by a long phase of hyperpolarization. Whereas the spike rise period lasted only about 0.2-0.4 msec., involving a maximum rise rate of the order of 300-500 V./sec., the falling phase usually occupied 2-3 msec. In the course of the final hyperpolarization phase the membrane potential reached a peak amplitude of 3-10 mV. within 1-4 msec. and then returned much more slowly to the resting level. In some cases the response patterns indicated that the somas had probably been directly excited by the applied stimulus. At low stimulus intensities small, graded subthreshold responses appeared, but above a critical depolarization level (ranging from 10 to 30 mV.) "all-or-none" spikes were evoked — the latency of the spike with respect to the prepotential varying with the stimulus strength. In other cases the data were more readily accounted for in terms of impulse propagation from a peripherally excited neurite to its impaled soma. Post-spike soma refractoriness was demonstrated by means of pairs of supraliminal stimuli, while repetitive stimuli resulted in soma block after 3 or 4 spikes at 100/sec., intermittent failure at 20-50/sec., and faithful responses at 10/sec. Temporal summation of subliminal stimuli was observed at stimulus intervals as long as 0.4-1.0 msec. The membrane action potential gradually deteriorated during the ganglion cell impalement, even when the resting potential showed little change in amplitude. This trend was often well advanced within the first minute after microelectrode penetration, but in some cases the response patterns were fairly stable for many minutes (up to 1 hour). Just prior to effective ganglion cell impalement — while no evidence of a resting potential was observed — unusually large diphasic action potentials were sometimes recorded, with an initial positive phase reaching 20-70 mV. in amplitude and lasting less than 1 msec. Although ganglion cultures were studied after intervals from 1 day to 7 weeks (the oldest attempted) following explantation, no significant differences were detected as a function of age *in vitro*. Comparison of the recordings from the cultured ganglion cells with those from various types of neurons *in situ* or shortly after isolation revealed important similarities, demonstrating that the cultured cells could retain at least many of their characteristic functions when properly maintained *in vitro*. Where deviations were observed the evidence indicated that these were probably due more to peculiarities in cell morphology and in recording technique than to significant alteration *in vitro* of the basic pattern characteristic of neurons in general. Analogous conclusions were reached concerning cultured, spontaneously contracting cardiac and skeletal muscle fibers after analysis of the less extensive series of records of membrane resting and action potentials that were obtained from these cells.

121 pages. \$1.51. MicA 55-346

1. This work was carried out with the aid of a research grant (#B-105) from the National Institute of Mental Health of the National Institutes of Health, Public Health Service.

ELECTROLYTE AND WATER METABOLISM STUDIES IN THE X-IRRADIATED RAT

(Publication No. 10,410)

Joseph Leonard Glenn, Ph.D.
Syracuse University, 1954

It was the purpose of the present investigation to determine the effects of sub-lethal, mid-lethal and lethal doses of x-irradiation on salt and water metabolism in the rat. Pair-fed controls were employed to eliminate any changes that might be due to the decreased food intake that irradiated rats exhibit. The investigator believed that the information gained from such a study might serve as a basis for therapeutic attempts to correct changes in electrolytes and acid-base balance following irradiation exposure.

X-irradiation was generated at 140 k.v.p. and 7 ma. by a Westinghouse unit with a Machlett tube (HVL = 4.5 mm. Aluminum). Total body irradiation was administered in divided doses, 50% of the total dose given dorsally and 50% ventrally. Dose-rate measurements were made prior to and following the exposure of each group of animals with a Victoreen condenser r meter. The intensity of the x-ray beam varied between 28.0 and 34.0 roentgens per minute at a target distance of 35 centimeters. The animals were irradiated in a triangular aluminum cage which contained three compartments with perforations on the sides for ventilation.

Mature hooded female rats of the Syracuse strain were used in all experiments. Animals were selected on a basis of growth curves in order to obtain healthy and infection-free animals. A total of 346 rats were used. When the animals were not in metabolism cages, they were housed in individual rat cages in an animal room maintained at a temperature of 74°F with a 4° variation.

The following experiments were conducted:

- Series I. Diuretic tests following 600r and 700r
- Series II. 500r x-irradiated rats and pair-fed controls
- Series III. 1000r x-irradiated rats and pair-fed controls
- Series IV. Fasted controls and 500r, 750r, and 1000r fasted x-irradiated rats
- Series V. Water deprivation of 1000r x-irradiated rats and controls
- Series VI. Serum sodium and potassium following 1000r x-irradiation

The data derived from the investigation support the following conclusions:

1. 500r and 600r x-irradiated rats excrete the same amount of a water load as control animals, but the rate at which they excrete the water is increased.
2. The first day post-irradiation polyuria, characteristic of rats, is completely eliminated by 24 hours water deprivation. This is offered as evidence that polydipsia is primary, and polyuria secondary following x-irradiation.
3. The loss of sodium in the urine of 500r and

1000r x-irradiated rats is not different from that in pair-fed controls.

4. A mild retention of sodium occurs in 500r, 750r, and 1000r x-irradiated fasted rats on the second and third day post-irradiation.

5. There is no significant change in serum sodium during the first 96 hours following 1000r x-irradiation.

6. A significant increase in urinary potassium occurs on the first day post-irradiation following 500r, 750r, and 1000r x-irradiation. This is a real loss and not associated with decreased food intake or increased urine output.

7. Potassium excretion can be completely divorced from water retention. An x-irradiated rat is capable of maximum reabsorption of water while eliminating excess potassium from the body.

8. Serum potassium levels are elevated during the first 96 hours post-irradiation, being the highest at 2 hours post-irradiation.

9. 500r and 1000r x-irradiated rats exhibit a greater weight loss than pair-fed controls. 500r, 750r, and 1000r x-irradiated fasted rats suffer a greater weight loss than fasted controls. These two observations are taken as evidence that ionizing radiation does have an effect on overall metabolism.

10. An appreciable adrenal response follows 500r to 1000r total body x-irradiation as evidenced by consistent hypertrophy.

67 pages. \$1.00. MicA 55-347

RENAL FUNCTION STUDIES IN HYDRATED AND X-RADIATED RATS

(Publication No. 10,416)

Lawton Harcourt Smith, Ph.D.
Syracuse University, 1954

The principle function of the kidney is to maintain an internal homeostasis irrespective of the changes in an animal's environment. In the present studies on rats excessive oral hydration constituted an indirect stress to the kidneys while selective x-radiation of the kidneys per se was employed as a direct stress upon renal structures.

The hydration experiments were designed to determine the effects of severe oral hydration on the renal function of intact and uninephrectomized rats. The results obtained from the hydration studies of intact rats were as follows:

1. Water diuresis following mild hydration was not attended by an increased glomerular filtration rate.
2. The increased rate of urine flow resulting from severe hydration paralleled a 17 per cent increase in the glomerular filtration rate. It is suggested that the increase in glomerular filtration rate contributed to the elevated rate of urine flow.
3. The elevated rate of urine flow resulting from mild to severe hydration was not attended by an

increased renal plasma flow. It is concluded that water diuresis does not depend upon an increased renal plasma flow.

The results obtained from the hydration studies of the uninephrectomized rats were as follows:

1. The glomerular filtration rate and renal plasma flow were approximately 55 per cent of bilateral function 18 hours following uninephrectomy. By 7 days these functions were restored to about 75 per cent of intact values. No further restoration of the glomerular filtration rate or the renal plasma flow occurred 28 or 60 days post-uninephrectomy.
2. In the progressively hydrated 18 hour uninephrectomized rat, a relatively successful excretion of water was indicative of renal compensation. On the 7th, 28th and 60th days following uninephrectomy tubular compensation was primarily responsible for an elevated rate of water excretion.
3. During progressive hydration the uninephrectomized rat excreted more sodium than the progressively hydrated intact rat.
4. During progressive hydration of uninephrectomized rats the decrease in serum sodium concentration mirrored the concomitant increase in the urine sodium loss.
5. Potassium excretion was slightly increased during progressive hydration of the operated rats.
6. Serum potassium concentration was not consistently altered in the hydrated uninephrectomized rat.

The primary purpose of the x-radiation experiments was to determine the x-ray induced changes in the renal function of rats. The procedures were designed to avoid damage to other organs, and to prevent radiation sickness. Measurements were made on rats whose kidneys were exposed to one of 3 x-ray doses, namely 2500, 3000 and 4000 r. The following results were obtained in these experiments:

1. The urine flow of rats whose kidneys were subjected to x-radiation doses of 3000 and 4000 r was not altered either 7 or 28 days following exposure.
2. On the 7th day following exposure of rat kidneys to 2500 and 3000 r a slight increase in the glomerular filtration rate occurred. On the 28th day following these doses a slight depression of the filtration rate occurred. While 7 days after exposure to 4000 r the glomerular filtration rate was unaltered, 28 days following this dose the filtration rate was significantly reduced.
3. The renal plasma flow of rats whose kidneys exposed to 2500 and 3000 r was not significantly altered on the 7th or 28th day after radiation. Similarly, on the 7th day after radiation 4000 r had no significant effect on the renal plasma flow. A significant reduction of the renal plasma flow occurred on the 28th day following exposure to 4000 r.
4. It is concluded that the rat kidney is not appreciably radio-sensitive to x-ray doses under 3000 r. The marked reduction of renal function induced by 4000 r was indicative of substantial kidney damage.

85 pages. \$1.06. MicA 55-348

POLITICAL SCIENCE

POLITICAL SCIENCE, GENERAL

THE POLITICAL IDEAS OF THOMAS SPENCE

(Publication No. 10,787)

James George Eayrs, Ph.D.
Columbia University, 1954

This dissertation is a study of the life and thought of Thomas Spence (1750-1814), an English radical, pamphleteer and political thinker whose views on government and society were developed as an attempt to overcome what he regarded to be the deleterious effects of the institution of private property in land.

The dissertation consists of four chapters and a bibliography. Chapter One is concerned with the life of Spence, and with the activities of his followers after his death. In Chapter Two an outline of English political ideas during Spence's lifetime, with particular reference to the work of those who in their defense of or attack upon the enclosure movement were led to discuss principles of social and political philosophy, is provided as a background for his political thought. Chapter Three examines the content of Spence's political writing. The final chapter appraises Spence's political thought and Spence's significance as a political thinker.

205 pages. \$2.56. MicA 55-349

INDIA AND DEMOCRACY: AN ANALYSIS OF THE 1951-1952 ELECTIONS AND THEIR POLITICAL IMPACT

(Publication No. 10,732)

Edward Robert O'Connor, Ph.D.
University of Notre Dame, 1954

The 1951-1952 general elections constitute the first test of democracy in India. In this dissertation the results of the elections are analyzed in terms of India's social conditions, the electoral law and the system of political parties. This study proceeds upon the premise that the electoral law or voting system bears a decisive relationship to the party system. The use of single-member constituencies with plurality victories encourages political consolidation around two moderate parties, one of which ordinarily has the full responsibility of government. Proportional representation, on the other hand, encourages a multi-party system which generally results in coalition governments. India's Constituent Assembly chose the plurality system on the Anglo-American pattern as an institutional device to help resolve the

country's disruptive antagonisms, for it foresaw that proportional representation would help disintegrate India's social structure.

The Congress Party, the traditional vehicle of Indian nationalism, won parliamentary majorities at the Center and in eighteen of the twenty-two States with a popular minority vote. This was possible because of the large number of plurality victories in constituencies contested by an average of four candidates. All the opposition parties, except the Communists, won proportionately more votes than seats, for the plurality character of the Congress victories minimized their representation. The plurality effects are even more obvious when the parliamentary elections are analyzed in the individual States and compared with the probable results under the Israeli and French forms of proportional representation. In neither case would the Congress have attained its majority in the Central Parliament.

The elections have been interpreted as a great victory for the Communists by some observers. However, half the Communist successes were in areas where they had strong local organizations. Here they frequently won with a majority vote and it will be difficult to dislodge them in the future. But elsewhere Communist success was on a plurality basis, and a combination of anti-Communist parties in the future could overcome the pluralities of the Communist parliamentarians. The debacle of the moderate Left, the Socialist and KMP Parties, in many constituencies resulted from their opposing one another as well as the Congress, thereby enabling the Congress to achieve a plurality. The national rout of the extreme Right, the Hindu communalists, can likewise be attributed to the plurality feature which isolated their candidates in the counting arena, although they maintained many local strongholds.

From the constituency returns it is evident that the lowest important percentage category in which any party won plurality victories was 30-35 per cent. Yet of the 1871 candidates seeking 489 seats at least 1037 polled less than 30 per cent of the votes. Most of these represented the opposition parties or were Independents. Their weaknesses in the constituencies show that they have no political future alone. They must merge or die.

This situation was perceived by the important opposition parties after the elections. The parties of the moderate center with eighteen per cent of the popular vote hold a critical position in Parliament and in the country. The merger of the Socialist and KMP parties constitutes a strong base upon which to build toward a two-party system.

In so far as the parliamentary structure of Indian democracy is concerned a certain amount of optimism is justified. So long as the Congress holds together it

can maintain a stable government. At the same time the moderate opposition can build strength for the future. However, parliamentary government does not proceed in a vacuum and political movements in the country will affect it. But these movements are beyond the scope of this dissertation.

334 pages. \$4.18. Mic 55-46

POLITICAL SCIENCE, INTERNATIONAL LAW AND RELATIONS

POLITICAL EFFECT OF WORLD WAR II ON KOREA: WITH SPECIAL REFERENCE TO THE POLICIES OF THE UNITED STATES

(Publication No. 10,722)

Paul Timothy Chang, Ph.D.
University of Notre Dame, 1953

The record of the Korean liberation is characteristic of power politics among the nations since the termination of the World War II. The hope for freedom which the Allied war aims lit in the minds of millions of oppressed peoples of Asia was quickly shattered by the gathering of dark clouds foretelling the storm. In Korea, the Allied Powers failed and its cost is tragic.

Of the multiple factors accountable for the American failure in Korea, there emerge three outstanding factors — administrative, psychological, and political. Administratively, the United States allowed the valuable twenty months from the day of the Cairo Declaration to pass by without adequate preparation both in terms of policy directives and personnel. Psychologically, the American occupation members were neither prepared to treat the Koreans as liberated people, nor was their arrogant behavior conditioned by the military-mind helpful in producing a friendly atmosphere.

Politically, in the absence of a definitive policy and beclouded by concern over the Communist threat, the military government made a series of grave political blunders which alienated the natives. The American fear for the Communist threat was not unwarranted, but an anti-Communist bulwark must not be a regression to reaction or ultra-conservatism. This is particularly true of a country like Korea where almost 80% of the population are poverty-stricken tenant farmers.

Over-concerned with the fear of the Communist threat, the American military government chose to retain the Japanese colonial administrative system; to give support to the minority group of extreme rightists and of alleged traitors and collaborators; and to condemn the moderates as leftists.

The People's Republic in Seoul which General John R. Hodge, commander of the American occupation forces, found upon his arrival in Korea was important not only for its national character, but also

because of the dominance the moderate groups enjoyed. General Hodge chose to declare summarily that the People's Republic was illegal and its leader Dr. Lyuh Woon-hyung a leftist. The Soviet attitude during the early period of the occupation in which the powerful moderate Christian leader, Cho Man-sic, was allowed to remain as the head of the subsidiary organ in North Korea of the People's Republic and in which the Soviets refrained to form their own military government was regarded as its readiness to accept a coalition form of government. Yet, there is no evidence of an exhaustive exploration of this possibility by the Americans. Instead, General Hodge permitted rightist leaders such as Dr. Syngman Rhee and Mr. Kim Koo to return to Korea from their exile. This attempt to bolster the rapidly declining American prestige only quickened the pace of the political polarization of the native parties and rendered powerless the moderate leaders such as Drs. Lyuh Woon-hyung and Kimm Kiu-sic.

The trusteeship plan proposed by Secretary James F. Byrnes at Moscow Conference in December, 1945, was unrealistic. In the eyes of the Koreans, this plan which envisaged the continuation of the paralyzing bi-zonal occupation system meant only the replacement of uni-power control with multi-power control of Korea.

In conclusion, it is observed that the American policy toward Korea had been almost completely devoid of any real consideration for the basic aspirations of the Koreans. In brief, the policy was motivated primarily by the desire to build an anti-Communist bulwark and failing in that "to get out . . . as quickly as possible and as cheaply as possible. . . ." The United States did not succeed because it failed to give due regard to the problem of nationalism and because it allowed concern over Communism to overshadow all other equally important problems. Korea holds the key to political equilibrium throughout the Far East. For this reason, peace in that region will be unthinkable without peace in Korea. And peace in Korea is possible only with the unity of the land and people and its neutralization. 270 pages. \$3.38. Mic 55-47

THE BEGINNING OF AMERICAN-CHINESE DIPLOMATIC RELATIONS: THE CUSHING MISSION AND THE TREATY OF WANGHIA OF 1844

(Publication No. 10,723)

Ming-shun Chiao, Ph.D.
University of Notre Dame, 1954

This is a study of the political relations between the United States and China from the beginning of the Opium War (1839) to the Treaty of Wanghia (1844). After the Americans entered the China trade in 1784, the number of American ships going to China increased constantly and American trade with China grew steadily in volume. But, the American merchants in the Empire had no legal standing before the

Chinese authorities; they traded and resided in Canton purely on their sufferance; and the American government paid no attention to their welfare.

In 1839, when the Chinese government decided to destroy the opium trade, American and other foreign merchants were imprisoned and their opium confiscated. It was under such circumstances that the American merchants sent a memorial to Congress, asking for the protection for American life and property in China, and for the establishment of diplomatic relations with the Chinese Empire. Thus, American officials in Washington realized that the Americans in China were really in a dangerous position because of lack of governmental protection. The Congress started to investigate Sino-American relations, and Commodore Lawrence Kearny was dispatched to China in command of the East India Squadron with orders to protect Americans.

In 1842, after the Opium War, Britain had gained numerous commercial and political privileges from the Chinese government by the Treaty of Nanking. Commodore Kearny immediately asked the Chinese authorities to grant the same privileges to the Americans. China, realizing the military power of the West, decided that it would not be expedient to reject Kearny's request. Thus, the Americans were put on the same footing as the British, though Kearny's request was not authorized by his government.

When the Tyler administration learned that the Treaty of Nanking had been signed in 1842, it appointed Caleb Cushing as commissioner to China to make a commercial treaty and to establish a formal diplomatic intercourse with the Chinese Empire. At the same time, the administration drew up a policy toward China. This policy was formulated in accordance with merchants' suggestion, and was, of course, based on mercantile interests. Its chief object was to extend American trade by securing for it the commercial privileges obtained by the British.

When Cushing arrived at China, there was no difficulty in attaining the primary object of American policy, because China, by Commodore Kearny's request, had already granted to Americans all the advantages that Britain won by force. But as China still intended to retain her isolationism, Cushing used an insistence on going to Peking as a means to have other privileges incorporated in the Treaty of Wanghia.

After the Treaty of Wanghia, the volume of American trade with China tremendously increased, and American Protestant missionaries more and more went to China. While the United States continued to hold to her policy of seeking an equal footing with other nations in China, she added to that claim an insistence on Chinese territorial integrity.

Thus, during this period, especially by the Treaty of Wanghia in 1844, the permanent lines of friendly relations between China and the United States were established. These lines can be seen to consist, first in negotiations conducted without threat of war; and secondly in the granting by China to the United States of equal rights with other nations in the China trade, and as a result of that, the beginning of what in later years was to be known as the Open Door policy in China.

301 pages. \$3.76. MicA 55-350

A CONSTITUTIONAL AND POLITICAL COMPARISON OF THE EXECUTIVE OFFICE IN LATIN AMERICA AND IN THE UNITED STATES

(Publication No. 10,729)

Joseph Francis Menez, Ph.D.
University of Notre Dame, 1953

The development of Latin American constitutionalism owes much to the influence of Spain, Portugal, England and the United States. Both Latin America and the United States experimented with the plural executive but subsequently rejected it. Latin American constitutionalism is neither parliamentary nor presidential but ministerial. Despite constitutional checks on the President, he generally rules supreme. A number of Latin American states are federal in theory but are not in practice.

United States and Latin American constitutions require the president to be a certain age and to be native born. Latin American constitutions, however, usually contain a long list of those persons ineligible for the position. While resignations are common in Latin America, no President in the United States has ever resigned. Some Latin American states have no vice president while others have two.

The American cabinet grew out of custom whereas in Latin America it is mentioned in the constitution. Thus, the legislative control over the cabinet in the United States is small but in Latin America it is large. There is individual and collective responsibility of the cabinet in Latin America. In the United States no such responsibility exists.

Despite the electoral college, the President in the United States is popularly elected. The two broad divisions of parties in Latin America are the conservatives and liberals. The electorate plays little part in the electoral contests. Continuismo, or the legal but dictatorial method of extending a term, is growing. Revolution is almost endemic.

The power of the president in Latin America to pardon is similar to the power exercised by the President in the United States. In Latin America, however, its use for strictly political reasons is not unknown. In the United States Presidents never tamper with the national courts but in Latin America this is a common practice.

The president in Latin America can declare a state of siege making him, thus, a virtual dictator. The state of siege has been compared to the suspension of the writ of habeas corpus but this is a surface resemblance. In the United States public opinion and tradition frowns on the participation of the military in public affairs but in Latin America this distrust does not prevail.

The United States president has large powers in the field of foreign affairs. He negotiates treaties as well as executive agreements. Both in the United States and in Latin America it depends on the personality of the president whether he will use the foreign office or the department of state much or little.

The Latin American president has a greater control over the opening and closing of Congress than does the President of the United States. In Latin

America and the United States the President can initiate legislation, the former by virtue of the constitution and the latter by virtue of custom.

The impeachment procedure is similar, except for details, both in the United States and in Latin America. The right of Congress to investigate matters within the competence of legislation is not as fully recognized in Latin America as in the United States. Under the United States Constitution the President can intervene in local areas only under very definite circumstances. The record of such interventions is small and the occasions were always extraordinary. But in Latin America presidents intervene in local areas on the flimiest excuses.

448 pages. \$5.60. Mic 55-48

**THE IMPACT OF TENSIONS UPON
INTERNATIONAL RELATIONS AND ORGANIZATION**

(Publication No. 10,772)

Earl Thomas Millen, Ph.D.
University of Washington, 1954

Introduction

The thesis of this study is that tensions, that is feelings of anxiety, fear, distrust and hatred, between nations are one of the major factors preventing greater international co-operation and integration between nations and the growth of more effective international institutions to prevent the occurrence of another war.

Part I

The conditions that give rise to tensions may be

considered on at least four levels or planes: the personal, the inter-personal; the group, and the institutional. Tensions arising on any of these levels may be expressed in conflicts on other levels. Many beliefs and attitudes that peoples have make conflict between nations seem a suitable means of dissipating their tension.

Part II

Tensions arising on the international level spring from the lack of adequate and effective national and international political, economic and social institutions and the consequent fear of war that arises because of the unregulated processes of change affecting some nations and the reactions of other nations to these changes.

Parts III and IV

In the resulting atmosphere of mounting tension both national and international institutions and politics are deteriorating under the strain. As the tensions grow and become more and more unbearable, the danger that a war of exasperation and despair may result becomes increasingly greater.

Part V

In the face of such a situation, the problem becomes one of finding a way to reduce tensions so that in an atmosphere free of fear and distrust international institutions may more easily develop and function more effectively and nations may peacefully resolve their differences. It is suggested that a policy based upon the creation of hopeful expectations, universal disarmament and politico-military security arrangements would be the best means of accomplishing this result. 332 pages. \$4.15. Mic A 55-351

PSYCHOLOGY

PSYCHOLOGY, GENERAL

**THE ATTITUDES AND ADJUSTMENTS
OF INSTITUTIONALIZED AND
NON-INSTITUTIONALIZED CATHOLIC AGED**

(Publication No. 10,642)

J. Richard Lepkowski, Ph.D.
New York University, 1954

Purpose

The purpose of this study was to compare the attitudes and adjustments of two groups of Catholic aged to determine whether or not a difference existed between those who lived in a home for the aged and those who did not.

Three specific problems were considered. First, an Attitude Inventory was developed through use of an

adaptation of R. S. Cavan's Your Activities and Attitudes schedule designed to measure the attitudes of the aged in the areas of health, friends, work, economic security, religion, usefulness, happiness and family. Second, to discover to what extent adjustment is evidenced by the measured attitudes. And third, to compare the two groups for possible differences in attitude and adjustment.

Procedure

The fifty-six items of the inventory were weighted for their representative degrees of adjustment by several of the country's most prominent experts in gerontology. This weighted version was administered to 93 institutionalized, and 32 non-institutionalized men and women covering the age range from 60 to 95. An Adjustment Rating Scale, patterned after the inventory, was used by two judges in rating the adjustments of subjects from both groups.

The two study groups were statistically compared on the basis of the following variables: age, sex, country of birth, length of time in New York City, marital status, and education.

Among the steps taken in the treatment of the data were: (1) Determination of the coefficient of internal consistency and the coefficient of construct validity of the Attitude Inventory. (2) The concurrent validity of the inventory and the reliability of the judges' ratings were ascertained. (3) Determination of the point on the attitude scale, scores above which identify the well adjusted; and another point, scores below which identify the poorly adjusted. (4) Comparisons of the attitudes and adjustments of the two groups according to the several variables.

Conclusions

The following conclusions are among those based on the results of this investigation: (1) The reliability of the Attitude Inventory is high enough to permit its use with groups of aged people similar to the ones used in this study. (2) The construct validity of the inventory as a measurement of adjustment in the aged is very high. (3) The concurrent validity of the inventory remains as a subject for further research—a revision of the Adjustment Rating Scale is indicated. (4) All of the categories except that of Religion contributed to a marked or high degree to the determination of adjustment in the two study groups. (5) An item analysis shows that 16 of the 56 items do not discriminate between the extreme groups to a significant degree. (6) There is practically no relationship between age and adjustment as measured by the inventory. (7) There is a tendency for adjustment to get poorer as length of institutionalization increases. (8) There are no significant differences in attitudes or adjustments between the two study groups compared on the basis of education. The trend in both groups is for better adjustment as the amount of education increases. Additional education earlier in life, apart from grade school, high school or college, is indicative of better adjustment later in life.

166 pages. \$2.08. MicA 55-352

phase, 82 white, male, college undergraduates were divided, on the basis of story-fantasy responses to ambiguous aggressive and nonaggressive pictures, into three categories of personality set: overaggressive, realistic, and underaggressive. In the second phase, the subjects were shown similar but unambiguous pictures through a tachistoscope, and their recognition thresholds for aggression and nonaggression were measured. The results were compared for the three categories.

The story-fantasy pictures were 10 in number and followed the general principles of Murray's TAT, although they contained, insofar as possible, only aggressive or nonaggressive stimuli. In six pictures the response-probability was aggressive, and in four nonaggressive. The story-fantasy responses were elicited from the subjects in a group administration and were scored on a three-point scale for aggressiveness of content. Frequency distributions were made of the subjects' total scores on the aggressive and nonaggressive sets of pictures separately, and both distributions were divided into upper and lower parts, according to which each subject's performance could be classified as high or low in aggressiveness. By combining performance on the aggressive set of pictures (A) with performance on the nonaggressive set (N), all but three of the 82 subjects were assigned to one of the three experimental categories as follows: (1) overaggressive—26 subjects scored high for aggressive response to both aggressive and nonaggressive pictures; (2) realistic—28 subjects scored high for aggressive response to aggressive and low to nonaggressive pictures; (3) underaggressive—25 subjects scored low for aggressive response to both aggressive and nonaggressive pictures. Three subjects scored low on the A and high on the N pictures, but the group was too small for statistical treatment.

The recognition pictures were 12 black-and-white line drawings, six depicting aggression and six nonaggression as unambiguously as possible. The tachistoscopic presentation was made to each subject individually.

For uniformity, in all pictures where aggression was portrayed, it was manual only, no weapons being used, and all the pictures were of two young men. Reliability of response was established statistically for the aggressive and nonaggressive pictures separately, in the case of both the story-fantasy pictures and the recognition pictures.

The experimental predictions were as follows: (1) the overaggressive subjects would lower tachistoscopic recognition thresholds for unambiguous pictures of aggression and heighten thresholds for unambiguously nonaggressive pictures; (2) the realistic subjects would have average recognition thresholds for both kinds of pictures; and (3) underaggressive subjects would heighten recognition thresholds for the aggressive and lower them for the nonaggressive pictures.

The statistical analysis of the data showed that the overaggressive and realistic subjects differed significantly from the underaggressive subjects in the prediction direction, while the overaggressive and realistic subjects did not differ from each other.

PSYCHOLOGY, CLINICAL

RELATIONSHIP BETWEEN AGGRESSIVE FANTASY AND THRESHOLD FOR PERCEPTION OF AGGRESSION

(Publication No. 10,780)

Leslie John Adkins, Ph.D.
Columbia University, 1954

The purpose of the study was to investigate the relation between personality set toward aggression and nonaggression, and perception of aggressive and nonaggressive situations.

The experiment had two phases. In the first

significantly in any direction. Therefore, of the three experimental predictions, two were upheld and one was not. A speculative attempt was made to show that the lack of significant difference between the overaggressive and the realistic groups might be due to the fact that western culture, although co-operative in large measure, has both a theoretical and emotional commitment toward competitiveness.

The importance of the study is that it has contributed to the substantiation of the perceptual theory that the objectivity of an individual's perception is a function of the strength and direction of his personality set and also the strength and direction of the perceptual stimulus. 101 pages. \$1.26. Mic 55-49

A STUDY OF CATEGORIES, VARIABLES AND VARIABLE-INTERRELATIONSHIPS OF SITUATIONS TROUBLESOME TO THE BLIND BASED UPON REACTIONS OF BLIND AND SIGHTED GROUPS

(Publication No. 10,404)

Francis James Affleck, Ph.D.
Syracuse University, 1954

INTRODUCTION

There is a dearth of scientific information on the social and personal adjustment problems of the blind. The dissertation gives a brief synopsis of the prevalence and prevention of blindness, biographical sketches of historical and contemporary blind personalities, incidence of retrothalamic fibroplasia and a discussion of psychological literature on the blind.

STATEMENT OF PROBLEMS

Thirty problems are listed for investigation among which are questions concerning the frequency with which blind and sighted persons encounter specific life situations, the degree of troublesomeness experienced by the blind, and the degree to which blind persons would tend to exclude themselves from social contacts if inadequate adjustments were made to the situations.

METHODOLOGY

An eighty-four item questionnaire of specific life situations was developed with the help of fifteen intelligent blind persons. Out of the 975 persons asked to cooperate in the survey, 456 requested questionnaires. Of this number, 153 were returned, and 139 (85 men and 54 women) were suitable for study. Two continua of five steps each, 0-4, were provided for recording of the frequency of encounter of each situation and the troublesomeness experienced. Mean reactions for each situation on each continuum were obtained. The subjects also selected five situations which they would eliminate from their experience if it were possible to do so.

Twenty-four sighted persons rated a seventy-nine

item questionnaire, comparable to that given the blind, as to the frequency with which the general population encounter each specific life situation. Mean reaction for each situation was obtained. Critical ratio of the difference of the mean reaction of blind and sighted groups was obtained for each item.

Twenty-five sighted judges rated each situation presented the blind as to the degree to which blind persons who made inadequate adjustments would tend to exclude themselves from social contacts. Mean ratings on each item were obtained to form the basis of the variable SSR, social self-exclusion result.

From foregoing, the variables NO, non-operation of the blind; I, incapacitation; D, discomfiture; DNA, discomfiture in normal adjustment; RN, rehabilitation need; and RP, rehabilitation practicability were developed.

The questionnaire items were dichotomized into four groups: autonomous-collective, active-passive, center of attention-non-center of attention, and encountering-non-encountering situations. The Pearson product-moment correlation was used to ascertain the interrelationships of the several variables.

RESULTS AND CONCLUSIONS

The sighted had a higher frequency of encounter in 57 of the 79 specific situations, the blind in 22, 42 and 9 respectively were significant at the .05 level. The sighted had a higher mean frequency of encounter for the entire questionnaire at the .0002 level of significance.

The blind encounter autonomous situations proportionately more frequently than they do collective situations. They are non-operating to a greater degree in situations that require them to be active.

The blind encounter situations in which they are not the center of attention markedly more frequently; and they find greater troublesomeness in encountering rather than non-encountering situations.

The first quintile of troublesomeness means reveals that the blind find their greatest difficulty in situations that refer to the manner of being guided, greetings and introductions, cutting food in public and in situations where queries about the blind are directed to sighted companions.

Nine of the eighteen correlations were significantly higher than zero. There is a high positive relationship between the degree to which blind persons would tend to exclude themselves from social contacts, because of lack of adjustment, and the amount of troublesomeness experienced in life situations. The blind report greater degrees of troublesomeness in situations that are less frequently encountered by the sighted population. These situations are inherently unpleasant because the blind are treated markedly different from the way one sighted person treats another.

301 pages. \$3.76. MicA 55-353

THE INTERRELATIONSHIPS OF THREE TEST CONDITIONS WITH FANTASY PRODUCTIONS

(Publication No. 10,762)

James Lewis Chipps, Ph.D.
University of Washington, 1954

This investigation is concerned with an experimental analysis of the antecedent conditions of responses to material of the Thematic Apperception Test variety. This type of behavior is usually referred to in the clinical situation as fantasy productions. Variables for study concerned three conditions which might effect changes in such behavior. They were: (1) A dimension of the stimulus properties of the cards or test material, (2) A dimension of the stimuli or cues emanating from the examiner, and (3) A measure of the personality of the subject. For the purposes of efficiency the study was conducted in accordance with a factorial design.

The cards were specially prepared to represent different degrees of aggressive behavior and were scaled for level of aggressiveness by a paired comparison technique. In order to vary an important aspect of personality, the subjects, 60 college students, were divided into three groups on the basis of scores on the Test-Anxiety Questionnaire, an instrument which measures the extent to which subjects admit anxiety, nervousness or worry in test situations. In order to vary the situation involving the examiner, the subjects, divided equally on the basis of sex, were treated so that half received ego-involving instructions and half task-oriented instructions.

The fantasy productions were measured by rating scales for Aggression, Affiliation, Anxiety, Level, story length, and reaction time. These variables were evaluated by an analysis of variance and by Coefficients of Concordance.

There was a very strong tendency for each of the response variables to differ as a function of the stimulus cards. The dimensions Aggression and Affiliation varied in proportion to the rated aggressive properties of the cards, as did story length and reaction time. The level of the stories and the degree of plot-anxiety elicited from each card was a positive function of aggressive stimulus value of the card, and seemed also to increase when males and females were in interaction.

There were no reliable differences on the measures taken as a direct consequence of the Test-Anxiety Questionnaire score of the subjects, of their sex, or of the ego-involving or task-oriented instructions of the experimenter. However, subjects who score high on the Questionnaire reliably responded with less affiliative response when ego-involved.

There were several reliable interaction effects involving the Test-Anxiety Questionnaire score, the sex of the subject, and the experimenter's instructions when differential response to the cards on the anxiety and aggression variables. These effects were considered in terms of the proposition that ego-involved subjects tend to inhibit response that they consider socially undesirable, and that the sexes take culturally accepted sex roles into account in their notion of social desirability.

The findings were discussed in relation to reports in the literature and to their implication for future research.

109 pages. \$1.36. MicA 55-354

RESPIRATION RATE CHANGE AND ITS RELATION TO AVOIDANCE BEHAVIOR

(Publication No. 10,788)

Lawrence Eldridge, Ph.D.
Columbia University, 1954

The present investigation was designed to test the hypothesis that a conditioned emotional reaction ("fear" or "anxiety") precedes an avoidance response and supplies the motivation for it.

Three albino rats, trained to stand on an enclosed perch, were each subjected to 18 hours of conditioning and 7 hours of extinction of an avoidance response--panel-lifting--to an aversive light. During conditioning, panel-lifting turned off the light; during extinction, the light remained on at all times. Simultaneous records of the animals' respiration and panel-lifting were obtained.

The avoidance response, panel-lifting, was conditioned quickly. Withdrawal from the panel was always preceded by an increase in respiration rate. During extinction, the presence of increased respiration following the start of the withdrawal declined and the average percent increase of the accelerated rate following withdrawal also declined.

The results demonstrated that a secondary negatively reinforcing emotional state of fear or anxiety --as indicated by the increased respiration rate:

1. may be elicited in Pavlovian fashion with proprioceptive stimuli becoming the eliciting stimuli;
2. Precedes an avoidance response;
3. motivates avoidance, i.e., behavior which will reduce or remove it;
4. establishes the reinforcing properties of behavior which is successful in reducing or removing it;
5. is extinguished when the secondary negative reinforcing stimuli which elicit it lose their negative reinforcing value;
6. is more readily conditioned than extinguished.

73 pages. \$1.00. MicA 55-355

AN EXPLORATORY STUDY OF THE EFFECT OF SHORT-TERM GROUP PSYCHOTHERAPY ON ATTITUDES OF TUBERCULOUS PATIENTS

(Publication No. 10,768)

Harry Klonoff, Ph.D.
University of Washington, 1954

There is increasing recognition among phthisiologists of the importance of attitudes and emotional reactions in the treatment of tuberculosis. Concomitant

with this, psychologists in tuberculosis settings are attempting to introduce some form of psychotherapy along with the prescribed chemotherapy.

This study was an attempt at providing short-term group psychotherapy under controlled, standardized conditions, so that a quantitative evaluation could be made of any resultant effect on attitudes. These psychological changes were then related with the physiological rate of recovery (roentgen progress).

The hypotheses tested in the present study were: (1) Experimental groups of tuberculous patients subjected to short-term group psychotherapy will not show a more pronounced change of attitudes relevant to tuberculosis, as measured by an attitude scale, than control groups. (2) The differences in attitudes of tuberculous patients, as measured by an attitude scale before and after therapy (predictor variable) will not be related to roentgen progress (criterion variable).

A situational attitude scale was constructed with which to evaluate the effects of psychotherapy. The composition of the groups in this study was according to a number of specified criteria. Eight groups — two female and two male experimental, two female and two male control — with six patients in each group, were selected for the experimental procedure. These were shown to be statistically equivalent on a group basis with respect to sociological, psychological, and medical variables. The replicated components were subsequently combined so that only four groups (one female and one male experimental, and one female and one male control) were used in the treatment of the data.

After the first administration of the attitude scale, the four experimental groups (two female and two male) were subjected to ten consecutive one-hour group psychotherapy sessions. Each session for each group was standardized with respect to theme, sex of therapist, and observer. The themes in these sessions included one on information about tuberculosis; eight on dimensions having an important influence in the treatment of tuberculosis; and one on an evaluation of the sessions. The four control groups (two female and two male) were exposed to the usual hospital routine only. The attitude scale was re-administered to the eight groups after an intervening period (therapy for the experimental groups and time for the control groups). The various time intervals for all the groups were either controlled or randomized.

The results provide evidence for the acceptance of Hypothesis I — experimental groups of tuberculous patients subjected to short-term group psychotherapy will not show a more pronounced change of attitudes relevant to tuberculosis, as measured by an attitude scale, than control groups. However, due to the statistical efficiency of the design the inference may be drawn that the procedure employed in this study produced a significantly greater change in attitudes of the female therapy group as compared to the male therapy group or the female and male control groups. Five of the eight dimensions comprising the attitude scale were most sensitive in reflecting the attitude change of the female therapy group as

compared to the remaining three groups. Two possible explanations were offered for the differential change found among the female and male groups, namely, the effect of the therapist and of extra-session social interaction.

The data for the second hypothesis was obtained by having two physicians rate roentgen progress along a four category classification — no change (0), slight change (+1), moderate change (+2), and marked change (+3). These scores were then correlated with the attitude scale difference scores. The results provide evidence for the acceptance of Hypothesis II — the differences in attitudes of tuberculous patients, as measured by an attitude scale before and after therapy (predictor variable) will not be related to roentgen progress (criterion variable). The following explanations were discussed to account for the absence of a relationship between attitude change and roentgen progress: small number of patients, brief interval of time, insensitivity of the measuring instrument, and the difficulty of obtaining a reliable measure of roentgen progress.

In addition, a brief evaluation of the effect of therapy was offered in terms of the patients' verbalizations, acceptance of the therapy procedure, and attendance. Suggestions for further research were included.

114 pages. \$1.43. MicA 55-356

**AN EXPERIMENTAL EVALUATION OF
THE RESEARCH LITERATURE AND ITS
COMPATIBILITY WITH THE DIDACTIC
LITERATURE IN THE AREA
OF MENTAL DEFICIENCY**

(Publication No. 10,640)

William C. Lawrence, Ph.D.
New York University, 1954

The Problem

The purpose of this study was to determine and demonstrate to what extent the didactic material of the ten most widely used textbooks in the field of mental deficiency is supported, refuted, or untouched by research data.

Delimitation of the Problem

The study is confined to those texts and published research that are available in the English language.

Sub-problems

1. What didactic statements exist within the body of instructional material evaluated that fall within the scope of this study?
2. What published research exists in the body of the literature investigated that falls within the scope of this study?
3. To what extent does this research meet accepted research standards of statistical and research techniques?
4. To what degree are the didactic statements compatible with the research data?

Assumptions

The study is structured on the assumptions
 (a) that mental deficiency exists in human life, and
 (b) that mental deficiency can be identified, measured, and described.

Hypotheses

1. Didactic statements will exist that are agreed upon by all authors of the material evaluated and all research will support these statements.
2. Didactic statements will exist that are in conflict with statements by other authors and research findings will tend to support more than one point of view.
3. Didactic statements will exist for which no foundation can be found in existing research.

Significance of the Problem

This study concerns three significant areas: the instructional material influencing the preparation of professional personnel in mental deficiency; the research data pertinent to the didactic material; and the quality of the existing research.

Procedure and Findings

Ten texts representing psychology, medicine, and education were investigated. Each didactic statement was extracted from these texts. Additional data were provided by an exhaustive investigation of all published research on mental deficiency. Each study was evaluated against a six point standard of research and statistical techniques.

The statements were categorized homogeneously under the headings of etiology, treatment and prognosis, learning and education, and general characteristics.

The sub-problems were answerable by the data. The hypotheses were supported by the data.

Conclusions

The following conclusions are specific for this investigation and are derived from the solutions of the sub-problems established for this study:

- (1) Didactic statements exist that fell within the scope of this study.
- (2) Published research exists which is pertinent to the statements.
- (3) The published research can be evaluated in terms of the six point criteria and that, in general, the research is acceptable under that standard.
- (4) Statements exist which are supported by all of the existing research. Statements exist which are both supported and refuted by the existing research. Statements exist which are without research foundation.

Discussion of the Implications

On the basis of this investigation it is held that: additional research is necessary on all aspects of mental deficiency; terminology should be standardized to facilitate communication; a revision of existing educational philosophy and techniques is indicated; many time honored concepts and cliches on

mental deficiency are not supported by existing research data. 150 pages. \$1.88. MicA 55-357

THE EFFECTS OF INTERMITTENT REINFORCEMENT ON RESISTANCE TO EXTINCTION AND EMOTIONAL BEHAVIOR IN PRESCHOOL CHILDREN

(Publication No. 10,773)

Donald Keith Pumroy, Ph.D.
University of Washington, 1954

The main portion of this study was concerned with the effects of intermittent reinforcement on extinction using children as subjects. This experiment grew out of a need for more systematic exploration of learning principles with different subjects. There was no particular theoretical question involved, only an empirical study of this effect. The secondary part of the study investigated some of the antecedent conditions in child learning. This was done by getting mothers' attitudes about child rearing and comparing them with their children's behavior in an experimental situation.

The subjects used were 48 nursery school children. The apparatus employed consisted of a box with two holes, one above the other. The response the children made was dropping a rubber ball in the upper hole. After four seconds' delay the ball rolled out the bottom hole ready for the next response. On reinforced trials a trinket would fall into a plastic box to the left of the apparatus. Each child received four different percentages of reinforcement: 16 2/3, 33 1/3, 50, and 100 per cent. All permutations of the four different percentages were used twice. After a particular percentage of reinforcement had been given, there was a two minute extinction period. After the two minute extinction period, the next percentage of reinforcement started, and this continued until all four acquisition and extinction periods had been completed. The measure of resistance to extinction was the number of responses made by the child during the two minute period. During the extinction periods the child's behavior was rated every ten seconds on three scales: intensity of behavior, whether it was verbal or motor, and the direction of the behavior. The mothers of the children participating in the experiment were given the USC Parent Attitude Survey in an attempt to determine if there was a relationship between the mothers' attitudes and the children's behavior.

The results of this study indicate that the differences between the number of responses following the different percentages of reinforcement were significant at beyond the 1 per cent point. The most resistance to extinction was found following the 100 per cent reinforcement group and the next most following the 50, 33 1/3, and 16 2/3 per cent, in that order. The data analyzed for the effect of trials, regardless of the percentage of reinforcement, shows that the most responses were made after the first trial and fewer and fewer responses were made as the trials

progressed. This difference was significant at the 5 per cent point. There was no significant relationship between sex and total number of responses. A significant relationship was found between age and total number of responses; the older children tended to respond more than the younger children.

On the Behavior Rating Scale it was found that the intensity of the children's behavior increased as they progressed from extinction period to extinction period. Other relationships were found between the total number of responses and the Behavior Rating Scale and within the Behavior Rating Scale itself. Only one significant correlation was found between the USC Parent Attitude Survey and the Behavior Rating Scale. This was between the Dominating Scale on the Survey and the amount of verbal behavior of the child. As there were 32 correlations, this one significant relationship would be expected by chance alone.

The results were compared with other experiments and the application of the apparatus to future experimentation with children was discussed.

78 pages. \$1.00. MicA 55-358

**THE EFFECT OF AMOUNT OF REINFORCEMENT
ON RESISTANCE TO EXTINCTION
AND EMOTIONAL BEHAVIOR
IN PRESCHOOL CHILDREN**

(Publication No. 10,774)

Shirley Ann Spence Pumroy, Ph.D.
University of Washington, 1954

The primary objective of this study was the experimental study of the effect of amount of reinforcement on extinction responses using children as subjects. A secondary interest was an investigation of the relationship between mothers' attitudes toward child rearing practices and the child's response to the experimental situation. Two major trends were cited as leading to the formulation of the problem. One was the desire to further a more systematic approach to the field of child development. The second trend was the view that there should be increased utilization of children as subjects in experiments concerned with the learning process.

The subjects consisted of 48 nursery school children, 27 boys and 21 girls. The experimental apparatus consisted of a large plywood box with two openings in the front, one above the other. The instrumental response was dropping a ball in the upper opening. It was held inside the box for four seconds,

at the end of which time it rolled out the bottom opening. The response could then be repeated. On reinforced trials a trinket was released from a trinket dispenser. Every child went through four periods of reinforcement and four two-minute extinction periods. Each child received the same number of reinforcement but in different orders. The amounts of reinforcement employed were one, three, five, and seven trinkets. The experimental design consisted of six Latin squares representing all 24 permutations of the four amounts of reinforcement. These squares were replicated once, so that there were two subjects undergoing each of the 24 orders. This design was chosen to minimize the intrusion of individual difference variables. The measure of resistance to extinction employed was the number of responses made during a two-minute period. During the extinction periods, the child's behavior was rated every ten seconds on a scale devised for the experiment. Intensity of behavior and proportion of verbal and motor behavior were rated on a five-point scale, and the direction of behavior classified into several categories. Mothers of the children were given the USC Parent Attitude Survey and their answers scored in terms of three parental attitude groups: dominating, possessive, and ignoring, as well as an adjustment score. These scores were correlated with the child's response to the experimental situation.

Statistical analysis of the results indicated that there was a significant relationship between number of extinction responses and amount of reinforcement. There was also a significant difference in response during the four extinction periods. This appeared to be primarily due to a decrease in number of responses during the first extinction period. The order in which the different amounts of reinforcement were administered had no significant effect on the number of responses made during extinction, as was also the case with age and sex of the subjects. Informal analysis of the intensity data showed intensity rated low with one reinforcement, and at a higher and relatively equal level for the other amounts. Intensity increased up to the third extinction period, and dropped somewhat during the fourth period. The categories on the behavior rating scale were also correlated with number of extinction responses and each other. Among the more interesting findings was the correlation between intensity ratings and proportion of verbal behavior. Of the 32 comparisons made involving the USC Parent Attitude Survey, only one was significant.

These findings were discussed with particular regard for further study with similar tasks and incentives.

80 pages. \$1.00. MicA 55-359

RELIGION

PROTESTANT CHRISTIAN EDUCATION IN THE LIGHT OF EMPIRICAL FINDINGS OF PERSONALITY GROWTH IN CHILDREN

(Publication No. 10,636)

Adolf Emil Kannwischer, Ph.D.
New York University, 1954

Chairman: Professor D. Campbell Wyckoff

The investigation is concerned with "The Study of Christian Education" which is a composite work of sixty representative Protestant scholars. The problem involved is that of testing the empirical validity of the theory of personality formation in children underlying "The Study of Christian Education," and to formulate a theory of personality growth in children, based upon empirically validated evidence. The problem is treated under four sub-problems. The first determines elements of theories of personality development in children established by the findings of cultural anthropologists and clinical psychologists. The second ascertains elements of theory of personality growth in children explicitly stated or implied in "The Study of Christian Education." The third tests the empirical validity of the elements of theory of personality growth contained in this work. The fourth formulates a theory of personality development, based on the elements which were found to have been empirically validated. The importance of the problem stems from the existent conflict within Protestantism between the views of many Christian educators and theologians from whom have come widely divergent reactions to "The Study of Christian Education."

The fields of cultural anthropology, laboratory and clinical psychology, and Christian education have produced research material which bears a direct relation to the present investigation. The scope of the investigation is limited by the selection of one school of thought from cultural anthropology and psychology, respectively. Margaret Mead's Sex and Temperament in Three Primitive Societies and Cora Du Bois' The People of Alor are representative of the applied school of cultural anthropology. The two works of Arnold Gesell and Frances Ilg, Infant and Child in the Culture of Today and The Child From Five to Ten, and Mary Shirley's The First Two Years are representative of laboratory and clinical psychologists.

From each of the selected works elements of theory of personality development in children are abstracted. They are divided into two broad categories, namely, constitutional determinants of personality and group-membership determinants. Constitutional determinants deal with postural, locomotor, mental, and emotional development. Group-membership determinants include feeding and elimination, bathing, sleeping, affection, play, discipline, and training.

Having abstracted and classified the various elements of theory contained in the source-material, the investigator employed the method of comparison and contrast to determine points of agreement and of difference. They are established within each field by subject and author, and between the two fields. Thereafter the points of agreement and of difference are synthesized into empirically established determinants of personality development in children by the use of four criteria. They are fully established elements, partially established elements, doubtful elements, and highly doubtful elements.

The same procedure is followed in determining elements of personality development contained in "The Study of Christian Education." The empirical validity of the elements abstracted from it is tested by comparison with the empirical data which constitute the norm. The results of the test indicate that there are unreconciled elements of personality development in "The Study of Christian Education." Specifically, significant discrepancies exist between the theological conception of personality and that held by most Protestant Christian educators. The position of the Christian educators, pertaining to the nature and structure of personality, is, by and large, validated by the empirical data.

The most significant conclusion concerning personality development is that it involves the three interrelated dynamic processes of maturation, acculturation, and emotional security. Maturation limits acculturation which consists of formal and informal training. Emotional security or insecurity arises from predominant culture patterns.

The results of the investigation are applicable to the family and church in general. They are particularly relevant for formal and informal training in religious attitudes of children in the family and in the church.

362 pages. \$4.53. Mic 55-50

SOCIAL PSYCHOLOGY

AN INVESTIGATION OF THE USE OF THE QUESTION MARK RESPONSE IN OBJECTIVE PERSONALITY TESTS

(Publication No. 10,415)

Nathan Rosenberg, Ph.D.
Syracuse University, 1954

This study was undertaken to explore the usefulness of a "?" score as a possible personality trait measure. The "?" response was postulated to relate to:

(1) Poor psychological adjustment as measured by the traits of the Guilford-Zimmerman Temperament Survey or the MMPI.

(2) Authoritarian ideology as measured by the California F-Scale.

(3) Rigidity as measured by the Wesley Manifest Rigidity Scale.

Correlations between "?" and other 'middle category' scores were also studied in order to check on the generality of behavior from the "?" response. In the process of analyzing data, item types in objective personality tests were identified in order to study their tendency to evoke "?" answers.

Large samples of Naval Aviation Cadets served as subjects. Their "?" scores from the Guilford-Zimmerman inventory were used to test the above hypotheses. Results of the analyses performed were consistent with the conclusion that there was no significant relationship between "?" scores and the measures of psychological adjustment, authoritarianism, and rigidity used.

In studying the behavior from the "?" to other middle category responses, the reliabilities estimated indicated that each score was a stable measure. Despite this, middle category scores are far from equivalent measures. The Guilford-Zimmerman and Thurstone "?" correlated only .16 and .44 with a Strong "indifferent" score. The Guilford-Zimmerman and Thurstone "?" inter-correlated .56, whereas their respective reliabilities were about .90. Thus, there is considerable chance of error in inferring from the behavior of one middle category score to another. However, since they intercorrelate significantly, this finding suggests one general, or several common, factors among them.

As an illustration of the vagaries of the total "?" score, correlations were presented between this variable and peer leadership nominations as well as a rating of tooth pathology used for studying dental psychosomatics. Guilford-Zimmerman and Thurstone "?" scores showed significant but contrary results with these two measures.

A study of item types productive of "?" responses suggests a plausible reason for the differing behavior of the Guilford-Zimmerman and Thurstone "?" scores. The Thurstone contains broad

interest-type items which were productive of many "?" responses; this item-type is not present to any degree in the Guilford-Zimmerman.

Both the Guilford-Zimmerman and Thurstone contain a common item-type productive of "?" answers which consist of items requiring the rater to judge how other people feel about him. It is suggested that "?" responses to these items may indicate social imperceptiveness by subjects.

A significant correlation was found between the production of "?" responses by an item and the difficulty for the group in judging an item, as inferred from the proportions responding in a given direction. Since this correlation is independent of specific item content, it was suggested that this particular rater tendency may account for the significant inter-correlations among middle category scores.

It was concluded that the total "?" score from different personality inventories will probably continue to relate differently to criterion measures since the evidence presented in this study indicates they measure different functions. Because of the variance of unknown composition which it represents, it is suggested therefore, that in new objective personality inventories, the "?" response alternative be eliminated if feasible. In existing questionnaires, its elimination would pose problems because of reduced trait score reliability and the need for new normative data.

When the "?" response is investigated further as a possible personality measure, it is suggested that variance in "?" scores be maximized. A factor analysis might be revealing as to the possible personality base for the "?" response.

168 pages. \$2.10. MicA 55-360

THE RELATIONSHIP OF SELECTED ECOLOGICAL VARIABLES TO LEAFLET MESSAGE RESPONSE

(Publication No. 10,776)

John Gordon Shaw, Jr., Ph.D.
University of Washington, 1954

This report is an outgrowth of one of a series of related investigations of the efficiency and effectiveness of air borne leaflet messages. This series, known as Project Revere, was conducted by the University of Washington Public Opinion Laboratory under contract to the United States Air Force. The present research investigated the extent to which a large urban population would respond to a leaflet questionnaire. The selection of a large community offered the opportunity to investigate the relationship between response behavior and several indices of ecological and demographic variables. It was believed

that the determination of these relationships could provide a firmer basis for the prediction of leaflet effectiveness than was currently available.

Three basic diffusion response types are distinguishable: (1) physical diffusion (i.e., the respondent picked up the leaflet from the ground); (2) social diffusion (i.e., the respondent received the leaflet from another person); (3) total diffusion (the combined values of (1) and (2)).

The intentions of the research were: (1) to provide information comparable to other Revere investigations; (2) to describe the responding portion of the population in terms of the information available from the questionnaire; (3) to investigate the joint relationship of selected ecological and demographic variables and the criterion variables of response.

The first of these was achieved by following standard procedures developed in the first year of the project. A standardized leaflet content and format was used. Leaflets were dropped over the entire city in a ratio of one per person in the population.

The second objective is reported in considerable detail in the body of this report. Some general statements are: (1) white respondents accounted for four-fifths of the replies received, although they constituted less than two-thirds of the population; (2) females responded significantly less than did males, although females did indicate significantly greater social diffusion than did males; (3) in general, the age group 10-14 years provided the greatest number of responses and the 0-5, 50-54, and 55-59 year groups provided the consistently lowest frequencies of response; (4) significantly more social respondents indicated receipt from persons outside their own households than from within their households, while significantly greater social diffusion took place between persons from the same neighborhood than was observed between strangers; (5) a moderate positive relationship was observed between response and median school years completed (between 70 and 76 per cent of the responses received were from persons indicating at least a high school education); (6) more than 50 per cent of the respondents had received their leaflets within 3-1/2 hours after the leaflet drop.

The third objective was achieved through the determination of the coefficients of multiple correlation and multiple determination. Using the total set of 16 independent variables, R^2 was found in every case to be greater than .50. Subsequent selection by a process of successive iterations reduced to five or less the number of independent variables necessary for essentially the same value. The joint relationships were determined between the set of predictors and criteria of relative (rather than absolute) frequency of response. Reconsideration of the set of 16 predictors resulted in the deletion of three of them on the basis of their interdependence in order to avoid spurious relationships. Using the remaining 13 variables, multiple and iterative solutions were made for the 6 criteria (total, physical and social diffusion for both the absolute and relative situations). The resultant R^2 values for the 6 situations ranged from .334 to .384 depending upon the criterion used.

No meaningful change was to be noted as the result of reducing the set of predictors from 13 variables to 5 or less. 211 pages. \$2.64. MicA 55-361

THE SYMBOLIC REPRESENTATION OF SOCIAL STATUS IN A NEWSPAPER: AN EMPIRICAL CASE STUDY OF WEDDING ANNOUNCEMENTS

(Publication No. 10,649)

H. Wallace Sinaiko, Ph.D.
New York University, 1954

The Problem

1. To examine selected material and behavioral symbols currently held indexical of social class membership by other investigators.
2. To analyze the relationship between these indices and the editorial treatment accorded various individuals in the society pages of a large newspaper.

Background

Much literature on social stratification has been generated in recent years. Emerging from these professional writings are claims that various types of behavior tend to differentiate the various class strata. Education, religious affiliation, type and location of home residence — these are among many behavioral patterns alleged to differentiate the social classes in America. Since newspaper accounts of marriages contain much information relating to factors supposed to be indicative of class standing, a content analysis was made of representative marriage stories to determine whether consistent social class patterns exist among announcements appearing in different parts of a newspaper.

Also, taking selected indices of social class membership, the relationships between these and certain other indicators were studied.

Collection and Analysis of Data

A stratified random sample of 516 marriage announcements was drawn from 50 consecutive issues of the Newark (N.J.) Sunday News. Information relating to 27 variables, grouped under the major headings of wedding, news story, and personal background characteristics of the two principals, was coded, sorted by punched card techniques, and analyzed statistically. Each of five sub-groups of cases, based upon page placement of the marriage announcements, was compared statistically with each of the other groups with respect to social class indices. Inter-group comparisons were run between sub-populations of marriage announcements sorted on the basis of religious affiliation, home residence, and educational background.

Results

The following social status indicators were shown to vary systematically with the editorial treatment of the marriage stories:

1. Religious affiliation varied between marriage

announcements appearing on different pages of the News. Certain "high status" Protestant denominations were more often identified with individuals given prominent editorial treatment than denominations generally claimed to represent lower social classes.

2. Educational attainment differed widely between stories appearing on different pages of the newspaper; more college and professional training was apparent in "favorable" page displays, and, for people with college education, status differences between types of colleges were also found related to page placement.

3. Residence was related to the type of news coverage; home communities categorized as "high social status" figured in marriage announcements reported on early pages of the News and in the longer articles, than did communities categorized as representative of "lower social status."

4. Eminent families were mentioned significantly more often in prominent marriage announcements.

5. In regard to military rank, the commissioned officer — usually identified with high status — turned up with greater frequency among prominently located announcements.

6. Certain wedding characteristics, such as location of ceremony and type of wedding trip, were found related to page placement of marriage announcements.

7. Occupational backgrounds varied in a manner supporting social class theory, with the editorial treatment given marriage announcement principals.

Religious, occupational, and educational characteristics of the sample were compared with U. S. Census data. They indicated the group was more representative of middle and upper-class populations than of the whole population. This finding verified predictions that the News would circulate largely among the higher strata groups.

235 pages. \$2.94. MicA 55-362

SOCIOLOGY

SOCIOLOGY, GENERAL

HOUSING AS A FACTOR IN PUPIL GROWTH AND DEVELOPMENT: A COMPARISON OF SELECT FACTORS OF GROWTH AND DEVELOPMENT OF PUPILS LIVING IN A LOW RENT PUBLIC HOUSING PROJECT WITH THOSE FROM SLUM HOUSING THROUGH THREE AND ONE-HALF YEARS OF ELEMENTARY SCHOOL EXPERIENCE

(Publication No. 10,634)

William Simon Jackson, Ph.D.
New York University, 1954

Statement of Problem

This investigation is to determine the differential in mental, social, emotional, and physical growth and development between elementary school children who had lived for three and one-half years (September 1949 to February 1953) in low rent public housing and their peers from slum housing for the same length of time. The following questions were investigated:

1. Were the public housing and slum housing samples equivalent as of three and one-half years ago?
2. Is there a differential between the two samples in their mental, social, emotional, and physical growth and development?
3. From the opinions expressed by the twenty extreme deviates and their teachers, is there a relationship between growth and development and the probable influence of housing?

Hypotheses

1. Housing, as defined, is a part of the "field of forces" and should be reflected in the classroom in measurable forms.
2. Slum pupils will tend to reflect the deleterious influence of their social milieu.
3. Public housing, which improves the social milieu, reflects on the growth and development of pupils in the classroom in measurable ways.

Methods and Procedures

The subjects were 263 Negro 5th and 6th grade pupils from two neighboring elementary schools in Central Harlem, New York City. The pupils lived in a public housing project and in several blocks of slum housing.

The equivalent group method was the design used in the investigation. Data were collected through official school records, objective questionnaire techniques, and interviews.

The extent of equivalency between the two groups was established on factors of:

1. Race
2. Family stability
3. Neighborhoods in which public housing families lived prior to being rehoused and those in which the slum housing families lived as of September 1949 were classified as slum areas
4. Pupils of both housing samples had attended the same school from September 1949 to February 1953
5. The families had remained in the same housing since September 1949

6. The initial chronological age
7. The initial intelligence quotient
8. The present occupation of the head of the family
9. Number of children in the family prior to September 1949

The instruments employed to determine the differential between the two groups were:

- I. Mental Growth and Development
 - A. IQ test performance
 - B. Standardized reading test scores
 - C. Standardized arithmetic test scores
 - D. Marks received in Reading, Arithmetic, and Overall Work Performance
- II. Social Growth and Development
 - A. Marks received in Training in Personality-Desirable Traits
 - B. Ohio Social Acceptance Scale for Intermediate Grades
 - C. Sociometric Test
- III. Emotional Development
 - A. Haggerty-Olson-Wickman Behavior Rating Scale - Schedule A
 - B. Teacher's Observation of pupils displaying extreme antisocial behavior characteristics
- IV. Physical Growth and Development
 - A. Wetzel Grid

Conclusion

1. The statistical findings indicated that public housing pupils, over a three and one-half year period, reflected by their progress in school:
 - (a) Greater mental growth and development
 - (b) Greater social growth and development
 - (c) Greater emotional growth and development
2. The hypothesis had low statistical validity because the test mean variables were not great enough to draw meaningful inferences.
3. The interview data made manifest inferences that housing influenced the quality of the pupils' lives.
4. The opinions implied that social factors, other than housing, were active in the milieu of the pupils. Housing, nevertheless, remained a significant factor.

Implications

The investigation

1. tests the scientific validity of a generally accepted assumption.
2. gives insights into the probable influence of the home environment on the pupils' attitudes, motivations, and readiness to learn.

3. encourages understanding of and appreciation for the meaning of the child's behavior in relation to his environment and physical, social, mental, and emotional growth and development.

198 pages. \$2.48. Mic 55-51

PATTERNS OF COMMUNICATION AMONG THE NAVAHO INDIANS

(Publication No. 10,804)

Gordon Franklin Streib, Ph.D.
Columbia University, 1954

This study is based on interviews and observations obtained with Navaho Indians residing in two different locations on the Navaho Reservation in New Mexico and Arizona. One focus of the study is methodological - the application of survey research methodology to a semi-literate society. Methodological topics discussed are: initiating the survey, construction of the questionnaire, administration of the research instrument, sampling procedures and the role of interpreters. Another methodological subject considered is the development of an index of acculturation. A series of attitude questions was used to develop the index, and it was possible to order the data by means of scalogram technique.

The communications process is analyzed in terms of four descriptive categories: the communicator, the content, the mode of transmission, and the audience. No specific types of persons or statuses are mentioned as communicators, but evidence is offered that younger and more mobile men are considered more frequently as communicators of news. The traditional image of the Navaho leader as a communicator - a person with public speaking ability - is still retained.

From the standpoint of the content of communication, it was found that Navahos are better informed and more interested in matters which are close to home, affect them personally, and which are relatively simple as compared to more distant and complicated matters. As the level of acculturation rises, however, Navahos become better informed about imported communications content and their interest is not limited to news of local significance.

It was found that the Navahos' use of the mass media of communications is very limited, but as the level of acculturation rises, there is a marked increase in contact with radio, print, and film.

The traditional mode of communication - person-to-person - plays the leading role in the communication process. Person-to-person communication concerned with imported messages seems to be developing a pattern which is different from that observed in connection with indigenous materials. The native leader is taking on a specialized role of communicator about meetings, a pattern which was not found in connection with the spreading of news about a native ceremonial. Person-to-person

communication is the bridge to the mass media for those who do not have direct contact with them. In this situation a pattern of communication is developing which is similar to the two-step flow of communication found in American society.

The survey findings suggest that the Navahos do not constitute a homogeneous communications audience with a unified frame of reference. The degree of acculturation, as measured in this study, appears to be a way to distinguish the different frames of reference which are held by various sectors of the population.

In order to point out the interrelationships of the components of the communications process an analysis of the survey data is offered to show the way in which communications are carried on about a particular subject—agricultural affairs. A case study of communications as it affected the attempt to unionize a group of Navahos is also employed to point out the interrelations of the components of the communications process.

Finally, an examination is made of the concepts "pattern" and "social integration"; and the empirical data, organized as patterns of communication, are offered as indices of the degree of integration of the society.

342 pages. \$4.28. Mic 55-52

work, and engaging in community planning and action. The method also yields the cost of certain parts of an agency program, which, although not functions of the agency, are necessary for discharging its functions. Examples are the cost of staff development, public relations, research and general administration. With these data it is a relatively simple matter to compute the unit costs of various services rendered by the agency, such as the average cost per in-person client interview, the average cost per hour of field work training of a graduate student, and so on.

Although a complete appraisal of this method cannot be made without further experimentation, the experience in applying it to Family Service of Philadelphia gives reasonable grounds for believing that the method has potentialities for use in the family agency field as well as other branches of social work. Early indications of changes resulting in this one agency from the cost study encourage the belief that cost accounting would aid materially in increasing the productivity and general efficiency of social agencies.

330 pages. \$4.13. MicA 55-363

SOCIOLOGY, FAMILY

AN APPROACH TO COST ACCOUNTING IN FAMILY AGENCIES: PRINCIPLES AND METHODS

(Publication No. 10,688)

John Gordon Hill, Ph.D.
Bryn Mawr College, 1954

This study represents an attempt to adapt the technique of cost accounting to the field of social welfare as one means of increasing the efficiency of welfare agency operations. This theme is exemplified in the adaptation of cost accounting techniques to the family casework branch of social work and a trial application of the method to Family Service of Philadelphia, one of the ten largest family welfare agencies in the country.

The method as developed follows closely standard cost accounting procedures with only those deviations that are made necessary by the nature of social work and social work operations. The major difference is the use of a sample time study of both professional and clerical staff to serve as the basis for allocating salary costs and certain other costs to the various cost centers into which the agency program is divided. Other differences relate to including estimated costs for donated services and facilities, which do not exist in the commercial world.

The final results give the cost of each function of the agency, such as providing casework services, group education, training graduate students of social

SOCIOLOGY, RACE QUESTION

THE NEGRO IN SOUTHERN GRADUATE EDUCATION

(Publication No. 10,816)

James A. Hedrick, Ed.D.
North Texas State College, 1954

This study evaluates interracial policies and practices in non-segregated graduate programs of Southern institutions. The study provides three analyses: (1) socio-economic factors contributing to integration of the Negro; (2) racial attitudes determined from the literature and from primary research in seven Southern graduate schools; and (3) interracial policies and practices discovered in Southern graduate schools.

Field work was carried out during 1954 on the campuses of state and private universities and colleges in Texas, Oklahoma, Arkansas, and Louisiana. Personal interviews were completed with deans, administrators, professors, and Negro and white graduate students. A racial attitude scale designed to test willingness to associate with four ethnic groups was administered to 448 graduate students, eighty-three of whom were Negro. A majority of the students polled were enrolled in schools of education. Lastly, the policies and practices used in effecting integration in these graduate schools were evaluated by means of criteria derived from the literature and validated by a panel of experts in race relations.

The research discloses general acceptance of the Negro graduate student by the white student in classroom and extra-class activities. There is considerable rejection, particularly in the Southernmost institutions, in activities involving personal contact or

community acceptance as social equals. Younger students indicate greater readiness to accept the Negro student than do older students. Graduate professors indicate that reaction of graduate students, both Negro and white, to integration of the Negro in graduate education has been favorable, and report favorable changes in their own attitudes.

A majority of Southern graduate schools reporting have instituted integrated programs since 1949. Initial enrollment was small in most instances, ranging from one to twenty-one. Enrollment has gained most rapidly in state-supported schools of education, with probably 90 per cent of Negro graduate students presently enrolled in this field of higher education. Problems created by integration of the Negro, other than frequent inadequacy of educational background, are (1) difficulties connected with adequate placement of the Negro graduate; (2) tendencies to stereotype Negro students as a group on the basis of performance of poorer students; (3) inadequate community recreational facilities; (4) emotional difficulties and problems of adjustment; (5) lack of understanding of the Negro and his problems on the part of many graduate instructors; (6) problems of communal living in college facilities. Procedures reported as successful in implementing integration include (1) a

policy of treating all students alike; (2) a consistent, positive, and enlightened stand on the part of administrators; (3) maintenance of academic standards; and (4) adequate counselling.

In addition to these findings, certain conclusions are drawn from the study: (1) the degrees of integration revealed by the research is indicative of the varying rates at which integration is proceeding in different sections of the country; (2) increased knowledge of the Negro and association with him over considerable periods of time on terms of equality and mutuality are effective in reducing racial prejudice; (3) association with Negroes of comparatively high educational and social status is an important factor in acceptance of the Negro by the white student; (4) students who accept the Negro in one phase of classroom or curricular activity are more likely to accept him in other related activities, although acceptance in the activities of one community institution does not necessarily imply acceptance in other community institutions; and (5) integration of the Negro in graduate institutions has in nearly all instances proceeded at a more rapid rate than within the community, thereby creating serious social, psychological, and professional problems for the Negro student.

354 pages. \$4.43. MicA 55-364

SPEECH — THEATER

AN HISTORICAL DEVELOPMENT OF ETIOLOGICAL CONCEPTS CONCERNING APHASIC SPEECH AND THEIR INFLUENCE UPON APHASIC SPEECH REHABILITATION

(Publication No. 10,618)

Elmer E. Baker, Jr., Ph.D.
New York University, 1954

This study is an investigation of the past and present etiological theories of aphasic speech and their influences upon the literature concerned with aphasic speech rehabilitation. Heretofore there has been no attempt to relate the various clinical techniques to the profuse and conflicting etiological concepts that have been evolved.

Relationships that exist among contending and concurring etiological theories were examined, and the development of the diverse theories of causation were related to the growth of educational, psychological, and medical knowledge. Beginning with the year 1800 the theories of the cerebral localization of speech functions were explored and delineated. The variant theories of cerebral functioning and of the cerebral localization of speech functions were compared and contrasted. The theories of each investigator were examined in order to determine the indebtedness to earlier contributions. The various symptomatological classifications were set forth together with the rationales that each investigator of

aphasia provided. The diagrammatic schematizations of the cerebral functioning of speech that were popular in the latter part of the nineteenth century were analyzed and related to observed aphasic syndromes. The psychological approaches to aphasia were set forth with a particular emphasis upon the utilization of dynamic concepts of language in these approaches.

Discernible trends in the etiological thinking about aphasia were described. The shifts of attention from strict anatomical localization of speech functions to physiological localization principles, and finally to the holistic psychological approaches to aphasic language disorders were developed as succeeding groups of investigators were considered.

The literature on aphasic speech rehabilitation was investigated to determine the extents to which the various etiological concepts have been utilized. Frequencies of utilization were determined for the following factors: (1) the notation of various etiological investigators; (2) the various aphasic speech symptomatology classifications; (3) the various systems of testing and diagnosis; (4) etiological investigators' theories of cerebral localization; (5) etiological investigators' theories of cerebral functioning; (6) pivotal concepts of cerebral mechanisms of language and of the nature of aphasic language disturbances.

In addition to ascertaining the scope of the recognition of various etiological concepts in a quantitative sense, the ways in which specific etiological concepts were adopted and utilized in establishing rationales

for speech rehabilitation techniques were developed in detail. The specific speech therapeutic techniques suggested for the treatment of motor aphasia, auditory aphasia, and amnesic aphasia were related to the varied etiological conceptions of these language disorders.

Certain prominent techniques of therapy offered in the literature on therapeusis were recommended for use with all kinds of aphasic speech disorders. These therapeutic conceptions were related to specific etiological conceptions. The therapeutic techniques that were so studied were: (1) the utilization of good mental hygiene principles; (2) the utilization of residual potentialities and spontaneous improvements; (3) the utilization of intelligence testing; (4) the utilization of phonetic training; (5) the utilization of "whole words"; (6) the utilization of multiple sensory avenues and heightened stimuli; (7) the utilization of purposeful and realistic drills; (8) the utilization of slow rates of instruction.

Therapeutic concepts of aphasic speech rehabilitation relate closely to etiological concepts of aphasia. The contradictions and unsolved problems contained in the etiological literature relate closely to the uncertainties and the differences of opinion in the literature on therapeusis. Evidences were found for the need of further explorations into and clarifications of the etiology and the therapeusis. The study presents specific recommendations for future neurological and therapeutic research.

It is hoped that this historical development of the various theories of causation and their influences upon therapy furnishes a chronological and a logical sequence for pivotal thinking about the problem, and that it provides a rationale for the varied therapeutic methodologies which the speech therapist should know and utilize. 548 pages. \$6.85. Mic 55-53

Finally, what evaluation can be made of the speaker and his speeches?

Reared in a frontier Indiana community by parents who were slightly above their neighbors in cultural tastes, Voorhees' early schooling was inadequate but he made up some of his deficiencies at Indiana Asbury University where he studied a rigidly classical curriculum. Lacking formal training in speech, he received a grounding of sorts in the activities of his literary society at Asbury. Voorhees became a superb defense attorney, allegedly winning some 36 of 37 murder trials, his most notable pleas being those offered in defense of John E. Cook in 1859, and Mary Harris in 1865.

Voorhees thought the Civil War was unnecessary. He opposed the Lincoln administration because of certain measures restricting individual liberty which he felt were unconstitutional. Although he supported the war after it became a bitter reality, he suffered much abuse and was accused of being disloyal as a result of his position. Ten years after his death his chief accuser admitted that he had no evidence of Voorhees' guilt. Because he opposed the Radical Republican coalition in their stringent plans for reconstructing the South, he was expelled from Congress on a technicality. Because to the victors belong not only the spoils but the privilege of writing the popular histories, the name tags which were attached to Voorhees in his lifetime were accepted at face value for several decades and he was subjected to the disparagement of silence.

He was appointed to the Senate in 1877 and was reelected three times. There he generally favored legislation which benefitted the common laborer: inflationary and anti-monopoly measures. His most constructive work was his part in building the new Library of Congress.

His speeches — legal, occasional, and political — were copious with some tendency to redundancy. He drew freely on a wide vocabulary to evoke images of beauty and power, often relying on examples from history, literature, and the Scriptures which embodied the basic ideas he was presenting. His speeches were unified by mood, but sometimes digressed from his major theme. He depended more on emotional proofs and his own prestige than on logic. His appearance on the platform was exceedingly favorable. Unusually handsome in his youth, as he grew older he presented a very distinguished appearance. His voice was pleasant and strong, and the inflection pattern was varied and expressive. Voorhees seemed to have communicated effectively in spite of the fact that he always read his important speeches. Affectionately known as "The Tall Sycamore of the Wabash," Voorhees was not a man of giant intellect, nor a machine politician. His spectacular success on the lecture platform, in the courtroom, and in the political arena was the result of his extremely effective delivery and a personal magnetism which added greatly to his persuasiveness.

228 pages. \$2.85. Mic A 55-365

THE ORATORY OF SENATOR DANIEL W. VOORHEES OF INDIANA

(Publication No. 10,698)

Forrest L. Seal, Ph.D.
Purdue University, 1954

Major Professor: N. B. Beck

Daniel W. Voorhees was one of the most effective orators of the last half of the nineteenth century, yet today he is scarcely known even among students of the speech-making of earlier times. The writer has attempted to explain this social phenomenon as well as answer the following questions: What was Voorhees like as a person? As a speaker? What speech training did he have? What were the rhetorical characteristics of his speeches? How effective were they? What were his themes during forty years of oratory?

ZOOLOGY

A TAXONOMIC REVISION OF THE EROTYLIDAE OF AMERICA NORTH OF MEXICO (COLEOPTERA)

(Publication No. 10,739)

Wilford Wayne Boyle, Ph.D.
Cornell University, 1955

Not since 1873 have the North American Erotylidae been treated taxonomically as a whole. This study was undertaken in order to fulfill this taxonomic need and also with the objective of investigating and exploiting taxonomically the following structures in particular: male genitalia, female genitalia, stridulatory organs, and wings. Immature stages were available for study only in rare cases; hence these were not studied as such, but references to papers on them are given under most of the genera.

Involved in this study were the following activities: Material totalling 13,438 specimens was borrowed from 32 North American museums and identified or otherwise studied. More than 500 specimens were dissected for genitalic and other studies. And visits were made to three institutions for the purpose of examining type material.

Studies done on both male and female genitalia have proved especially useful. A number of characters of importance at various taxonomic levels were discovered in the genitalia of both sexes. These are illustrated in connection with the taxonomic treatment of the various forms. Examination of the cephalic stridulatory files has proved valuable in that the presence or absence of these structures in one or both sexes appears to be correlated with other, more easily visible characters; thus conclusions based on the latter concerning relationships are reinforced. Study of the wings, on the other hand, has proved fruitless. Very little variation is evident in these organs between species, genera, or even subfamilies.

Taxonomic and nomenclatorial conclusions are as follows: Three subfamilies, ten genera, forty-nine species, and four subspecies are recognized as occurring in the United States and Canada. Three genera are divided into two species-groups each, largely to facilitate taxonomic treatment. Twenty-two specific, four subspecific, and one generic names are placed in new synonymy. Descriptions of three new species and one new subspecies are also presented.

Phylogenetic relationships of North American genera (as indicated by this study) are presented diagrammatically and discussed briefly. Illustrations comprise 15 plates and 143 figures. Keys to the subfamilies, genera, and species are presented along with descriptions of each taxon.

289 pages. \$3.61. MicA 55-366

A TAXONOMIC REVISION OF THE COTTUS BAIRD AND COTTUS CAROLINAE SPECIES GROUPS IN EASTERN NORTH AMERICA (PISCES, COTTIDAE)

(Publication No. 9923)

Charles Richard Robins, Ph.D.
Cornell University, 1954

A study of the cottine fishes of North America east of the Continental Divide was undertaken to elucidate the existing taxonomic confusion. Three natural groupings of species seem to be represented within this region. The interrelationship of these groups will not be known until all species of Cottus are studied throughout their ranges both in North America and in Eurasia. Group one includes only the spoon-head sculpin, Cottus ricei (Nelson). This species apparently has no close relative on the North American continent and was excluded from further study. Group two includes the redfin sculpins, Cottus bairdi Girard and its allies. Group three includes the banded sculpins, Cottus carolinae (Gill) and its allies.

This arrangement differs sharply from that seen in the literature. Cottus cognatus Richardson generally has been subgenerically or generically separated from C. bairdi on the basis of the numbers of pelvic rays and the degree of development of the palatine teeth. These differences do not hold in either species. The two species share the uniformly colored chin and the red-bordered spinous dorsal fin, the enlarged anal papilla, and the blackened breeding coloration of adult males, all of which define the bairdi group.

Until very recently, C. carolinae has been treated as a synonym of C. bairdi. It proves to be a complex of several forms all of which differ from the bairdi group in lacking sexually dimorphic features and in having a strongly mottled chin. Representatives of the two groups occur sympatrically in the Potomac and New rivers, in most of the Tennessee River basin and in many of the rivers of the Ozark uplands of Missouri and Arkansas. Members of the same species groups occur together in several river systems but are not ecologically compatible.

In order to study the speciation and dispersal of the various species in eastern North America a study was made of geographic variation in members of the carolinae and bairdi groups, excluding C. cognatus. Counts of fin rays and lateral-line pores, and measurements of various body parts were made on more than four thousand specimens. Many more were examined cursorily. The data are presented as frequency distributions. Hubbs-Perlmuter diagrams are utilized where such a method of analysis seemed applicable.

The distribution of the carolinae group is centered around the geologically long established Tennessee River Basin. The more primitive forms are in drainages peripheral to this center of dispersal and

represent temporal relicts of various stages of the actively evolving Tennessee River stock. The various forms of carolinae appear to tolerate warmer temperatures than do C. bairdi and its relatives and where the two occur sympatrically, the carolinae type is generally the more wide ranging. Recent glaciation of eastern North America has had very little effect on the distribution and dispersal of the carolinae complex.

The bairdi group had as its eastern center of dispersal the old Teays River system and perhaps other portions of what is now the upper Mississippi River. Glaciation has had major influences on the dispersal and speciation of the members of this group, all of which are restricted to cold water situations. The

advance of glacier ice allowed southward dispersal of the group while the subsequent glacial recessions restricted and isolated the southern populations. The postglacial dispersal into the northeast is also discussed.

Identification of the various species is rendered difficult by excessive intraspecific variation which often exceeds and masks the differences between species when the entire range is considered. Keys to the three species groups and to the members of the carolinae group are presented. Until C. cognatus is thoroughly studied it is not possible to present an adequate key to the bairdi group.

Advance notice is given of three new species and four new subspecies. 272 pages. \$3.40. MicA 55-367

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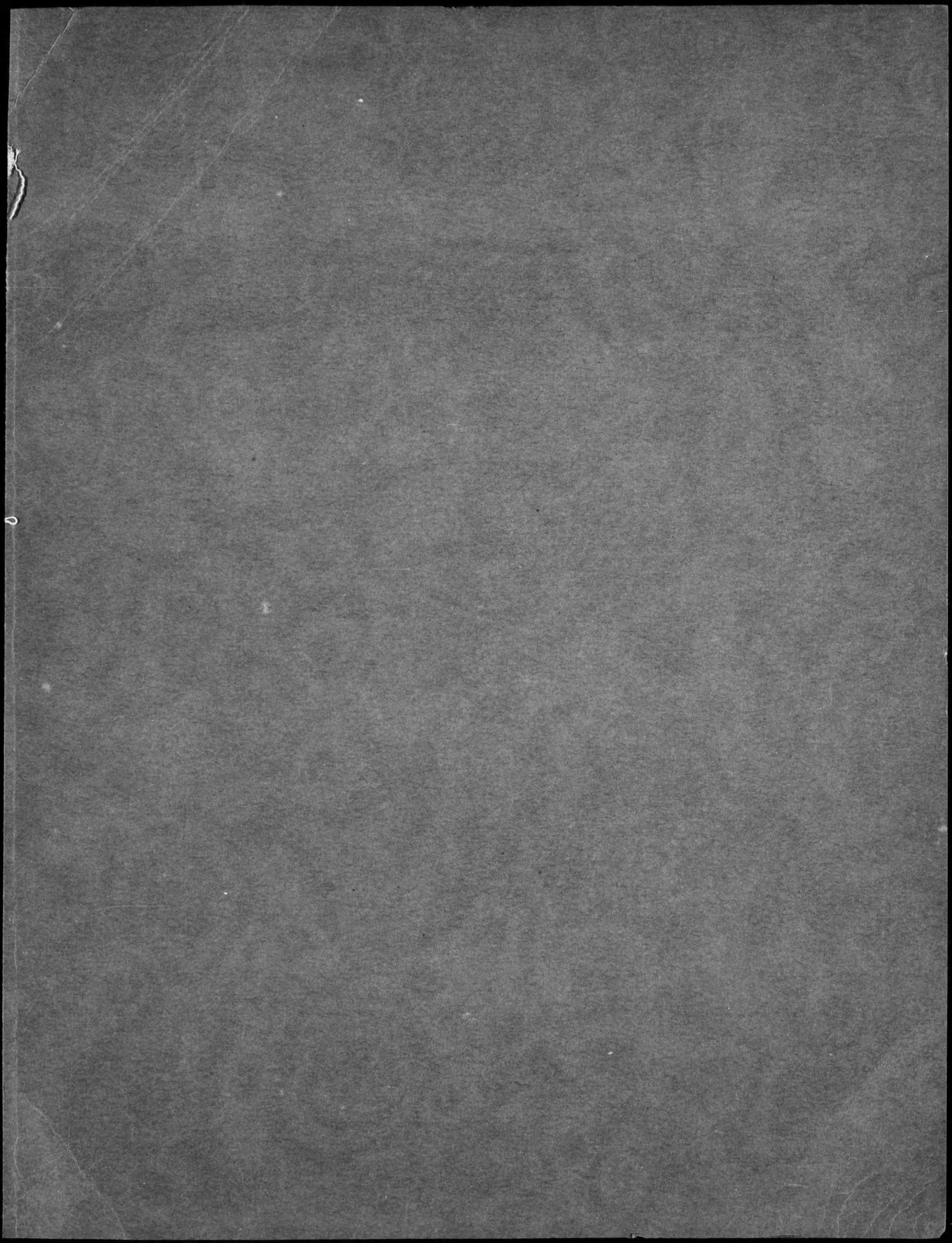
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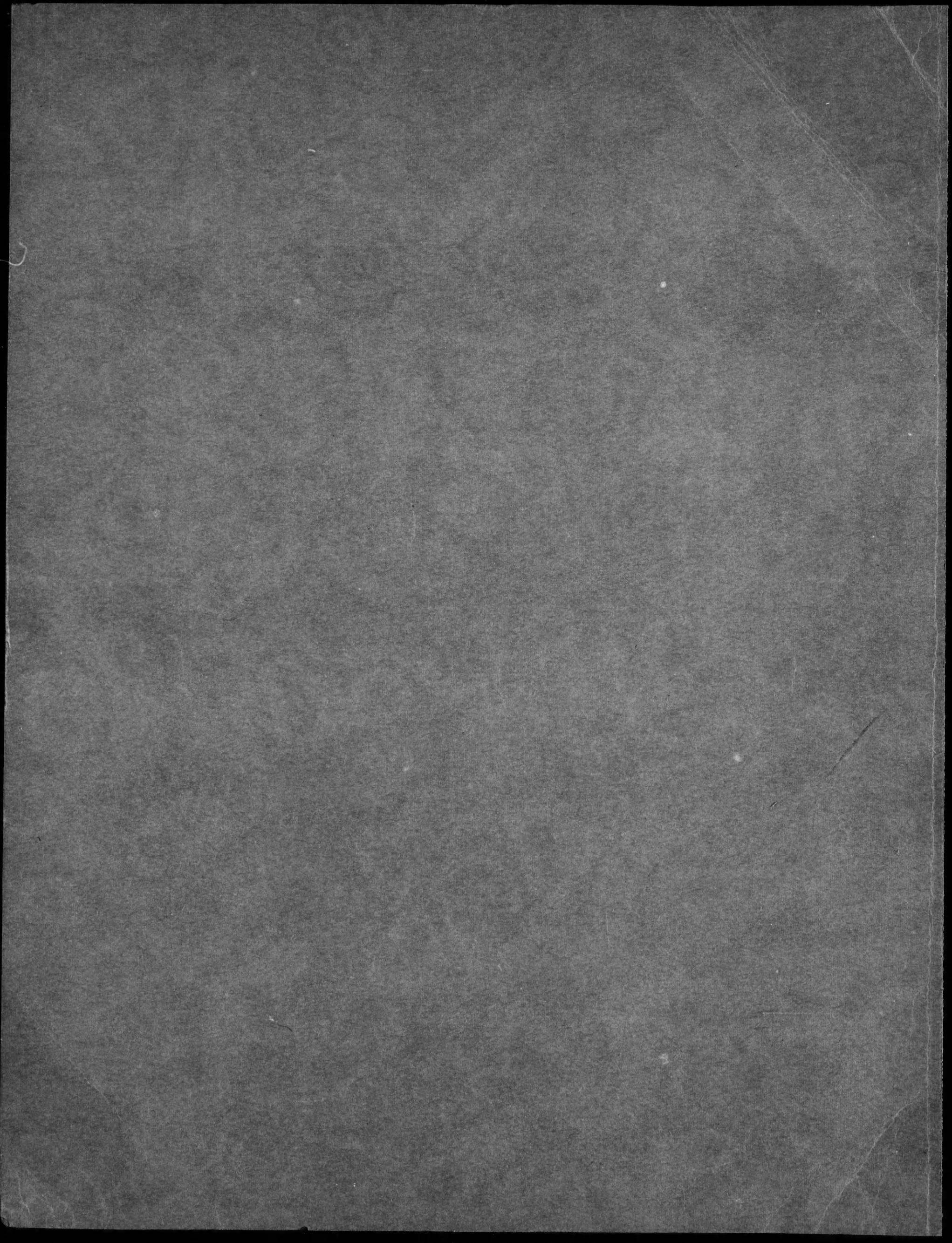
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